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THE BLOOD BANK OF THE JOHNS HOPKINS HOSPITAL

MARK M. RAVITCH, M.D.

BALTIMORE

For many years the pediatric service of the Johns Hopkins Hospital has stored citrated blood in 500 cc. quantities as drawn from adult donors, to be parceled out to one or several recipients. This practice arose from the necessity for small transfusions and from the inconvenience of taking repeated small amounts from donors. The surgical service has also drawn blood in anticipation of its use for one patient and occasionally has found it convenient to give it to another. This blood was stored for varying periods, on one occasion as long as seventeen days. These small and occasional blood stores constituted informal banks and differed essentially from the routine practice in transfusions at the time only in that the blood was kept in the transfusion system (or at times poured over into sterile flasks) for days instead of minutes between being drawn and administered. In the early part of 1939 the work of the Cook County Hospital in Chicago led to the establishment here of a blood bank suited to our purposes, and the bank was opened in March.[1] After a period of several months a combination of circumstances, some to be detailed later, led to the necessity for the adoption of new rules and for a reorganization. The difficulties which arose and the measures taken to obviate them are of some interest. The horizontal disposition of the hospital units (built on the old "pavilion" plan instead of the modern, vertical, skyscraper plan) presented physical difficulties, and the strict division of personnel into the several hospital services complicated the problem of organization. The considerable proportion of Negro patients also constituted one of the primary problems. Although there is, of course, no valid objection on biologic or physiologic grounds to the transfusion of patients of one race with blood from donors of another, it has been deemed best to avoid the issue.

At present the services participating in the blood bank are the surgical, medical, obstetric, gynecologic, urologic, orthopedic and otolaryngologic. The pediatric service has not joined the blood bank because the children's unit is not sufficiently convenient to the building in which the bank is located. A technician is on duty in the bank between the hours of 9 a. m. and 5 p. m. six days a week. He performs the groupings and cross matchings, keeps the records and sees that the blood stores are maintained. The care of the apparatus, its maintenance, washing and wrapping for sterilization are also the responsibility of the technician. He is supervised by the physician in charge of the blood bank, at present one of the assistant resident surgeons, who carries this in addition to his other duties. It has been found that a major requirement for successful functioning of the bank is centralization of authority and responsibility. To further this end, one house officer from each member service is made responsible to the bank for all blood transfusions done in his service. This house officer is responsible for everything connected with transfusions in his service—drawing blood, giving blood and grouping and matching bloods when the technician is not available. In addition, one assistant resident in each service has been designated to supervise the work of his house officer.

The bank is housed in a small room adjoining the laboratories of the Biological Division of the Medical Clinic. The room is furnished with the technician's desk and microscope, a table for centrifuge and shaking machine, a long table for wrapping the transfusion sets, and a two burner gas range for boiling and processing tubing and glassware. There is also a large sink equipped with several spigots to which tubing may be directly attached. The sink is lined with sheet sponge rubber to minimize breakage of glassware. A drainage rack for bottles and a cabinet for supplies and the storage of sets complete the equipment. The transfusion sets are sterilized in the autoclaves of the central sterile supply room of the hospital. The blood is stored in one compartment of the refrigerator of the Biological Division, in which the temperature is kept constantly at 35 F. The compartment contains two shelves, one for blood from white donors and one for blood from Negro donors.

In establishing an initial supply of blood for the bank it was necessary to use as donors members of the family of any patient who was ill enough so that the announcement of the possible need for transfusion would not be an added cause for alarm. In some instances two donors were bled when a patient needed a transfusion, the second flask of blood going into the bank. In addition, the obstetric service found it easy to obtain blood from the families of women taken to the delivery floor, since the possibility of severe hemorrhage during childbirth is recognized by the public. The same sources are used to make up bank deficits which result when blood is out of date, when a recipient has neither family nor friends to serve as donors or when a recipient dies before the blood which he has used can be replaced. Blood obtained from the bank for private patients must be repaid with blood and may not be bought directly from the bank for cash. The blood for replacement must be obtained either from a family donor or from a professional donor paid by the patient.

From the Department of Surgery and the Biological Division of the Department of Medicine of the Johns Hopkins University.

1. Most of the original work and experimentation with apparatus, technic and organization was done by Dr. Russell Williams then resident physician.

We have also occasionally used convalescent patients as donors. Therapeutic venesections are an infrequent source of supply.

In a hospital the size of ours,[2] and with the volume of transfusion done (from 100 to 110 transfusions monthly through the bank), and particularly in view

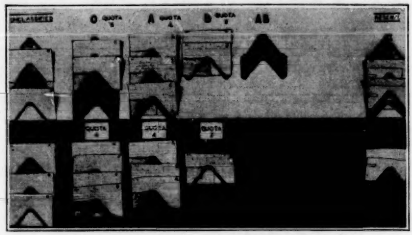

Fig. 1.—The bank board. There is a card on the board for each bottle of blood on hand. The blood that is "on reserve" is included in the quota. Cards for blood from white and from Negro donors are filed in the appropriate halves of the board.

of the fact that we were running two entirely separate small banks, for white and for Negro patients instead of one larger one, it was found necessary in the trial period to maintain a close watch over the flow of blood into and out of the bank. If blood was drawn for the bank without regard to the group, excesses in the rare groups occurred which, in the period of storage, were not corrected by a corresponding demand. It was further found that to permit services to "build up a credit" when more blood was available than they owed was to permit the accumulation of more blood than could be used before the expiration date. For this reason we have established a quota system. The original quota was, for each race, five flasks of O blood, four flasks of A blood, three flasks of B blood and no flasks of AB blood. We have since revised these quotas to five, four and two for the white and six, four and two for the Negro race (fig. 1). When donors present themselves, the house officer in the ward questions

FORM 3073 THE JOHNS HOPKINS HOSPITAL

REQUEST FOR BLOOD GROUPING & MATCHING

....
NAME COLOR WARD SERVICE

Date..... Hour.....A.M. P.M. Hist. No.....

Diagnosis.....

Blood group..... Signed.....

☐ Emergency
Bank ☐ CHECK ☐ To be transfused as soon as matched
☐ To be transfused but not urgent
Professional ☐ ONE ☐ Precautionary matching
☐ Group and Hold
Family ☐ ☐ For operation on (date).....

Fig. 2.—Type of slip used for request for blood grouping and matching.

them with regard to syphilis and antisyphilitic treatment and performs macroscopic groupings, equipment for which purpose, supplied with high titer grouping serums, is present in every ward. The bank is then offered its choice of blood in the available groups. Our quota restrictions are not rigid and we permit an excess of one or even two flasks in the O or A group. In group B we discourage an excess because of the slow turnover. An attempt is made to keep the total number of flasks of blood on hand constantly at or near the maximum.

It is optional with the house officers whether the serologic test for syphilis is performed before or after the blood is drawn. Serologically positive blood is discarded, of course, but the time wasted in drawing such blood is compensated for by the saving of time to interns and donors in drawing blood without delay. An economy resulting from the institution of the bank has been the elimination of the expense of having technicians on call for emergency serologic determinations on donors. If emergency transfusions at night are needed in the pediatric service or in the private wards, and professional donors are not wanted, bank blood is supplied.

During the trial period all donors were required to have negative serologic tests for syphilis before blood could be drawn. At the same time house officers had not yet become accustomed to giving blood to their patients before drawing blood from a donor. It frequently resulted that, while waiting for the serologic report and before drawing blood from a donor, the house officer would match the donor's blood against that of the patient. When these happened to be of the same group and were compatible, the house officer often decided to use the donor on hand instead of taking "old

FORM 3073 THE JOHNS HOPKINS HOSPITAL

REPORT OF BLOOD GROUPING & MATCHING

AM Hist No.....
Date.....Hr.....PM Requested by.....
The
blood of..... ....
NAME COLOR WARD SERVICE

Blood group.....Is matched and is compatible with,
Bank blood No.....
Professional donor.....Group.....
Family donor.....
Matching checked by..... Signed.....
Checked on ward for correspondence of:-Name of patient; No. on card; No. on this slip; No. on bottle.
Signed.....
HOUSE OFFICER OTHER THAN ONE TRANSFUSING.

Fig. 3.—Type of slip used for report of blood grouping and matching.

blood" from the bank for his patient and repaying the bank with fresh blood from the donor. The obvious consequence was that the turnover of bank blood was slow and small, a high proportion of bloods remained unused over the original seven day limit and difficulty was encountered in replacing the blood. It was therefore required that all transfusions on ward patients of the member services be done through the bank. In the private services the use of the bank is optional. In specified conditions, when approved by the resident or head of the service, exceptions to the use of bank blood are made. Leukemia, granulocytopenia and purpura have been the chief diseases for which the use of freshly drawn blood is indicated. For severely jaundiced patients we prefer to use the freshest blood in the bank rather than to follow the usual practice of using the oldest blood first.

In the trial period of the bank, from March through July, blood was kept for only seven days. We have increased the period of maximum permissible storage to ten days, but for the past six months the average age of blood when used has ranged from month to month between three and one-half and four and one-half days.

BOOKKEEPING

An effort has been made to reduce to a minimum the "paper work" of the bank. The specimens of a

2. In the member services there are a total of 408 public ward beds.

prospective recipient's cells and serum are sent to the bank with the request slip (fig. 2), which indicates the degree of need for the blood. After the matching has been completed this slip, with the number of the compatible blood noted on it, is filed alphabetically in its service file, to be removed at the end of the month and stored. The same information is kept permanently available for ready reference in a ledger arranged chronologically. The report slip (fig. 3), with gummed back for easier pasting in the history, is clipped to the transfusion card, the two are placed in the reserve file on the board (fig. 1), and the house officer who made the request is notified. Each morning inquiry is made of the house officers who signed the requests of the previous day as to the need for prolonging the reservations. Because patients can now be grouped, matched and given transfusions in less time than it formerly took to call in and bleed the already matched family donor, it is hardly necessary to match bloods in advance except before operation or delivery, or in the presence of hemorrhage or continuing shock.

Each service has a small book ruled as in figure 4. In depositing blood in the bank the house officer writes in the book the number of the blood and checks the

SURGERY

BLOOD PUT IN BANK							BLOOD WITHDRAWN FROM BANK						BLOOD OUT OF DATE OR SPOILED						
DATE	#	COLOR		GROUP			#	COLOR		GROUP			#	COLOR		GROUP			
		W	C	AB	A	B	O		W	C	AB	A	B	O		W	C	AB	A	B	O	
12-1-39	511	✓					✓	507	✓			✓		✓	488	✓			✓			OUT OF DATE
	512	✓			✓			495	✓				✓									
	513	✓			✓			493		✓			✓									
12-2-39	515	✓			✓																	
12-3-39								518	✓				✓									
								519	✓				✓									
12-4-39	527	✓					✓								527	✓			✓			S.F.S. POSITIVE
12-5-39	530	✓			✓																	
12-6-39								514	✓			✓										
								510	✓				✓									
12-7-39	539	✓					✓	530	✓			✓										
	540	✓		✓																		
	541	✓		✓																		

Fig. 4.—Record of blood on hand in the blood bank as it appears in "small book."

race column, and after the technician has microscopically confirmed the macroscopic grouping of the blood, the group column is checked. When withdrawing blood the house officer enters the number of the blood and checks the appropriate column for group and race. The third division is kept by the technician. The house officers accredited to the bank are informed each morning of the debts of their respective services, which they are expected to make good in twenty-four hours. Bloods unused at the expiration of ten days, or found to give a positive or doubtful serologic test for syphilis, are withdrawn from the bank and charged against the service which drew them. Twice a week forms are sent out to all assistant residents reading as follows: "The blood bank has on hand the following bloods, Colored ....O, ...A, ...B, ...AB, White ....O, ...A, ...B, ...AB [the number of each is indicated] which will be out of date on .... [day and date of next notification day]. We should be glad to have this blood used."

The blood transfusion cards are taken to the wards, together with the matching reports, at the time of transfusion. The report slip must be initialed at the bedside by a house officer other than the one giving the transfusion, in evidence that card, report and bottle tag correspond as to group, number and name of recipient. The cards remain in the ward, and in the appropriate spaces the nurse fills in the recipient's name, age, race, history number, the pretransfusion

Fig. 5.—Donor set. This is all that is taken to the ward for drawing blood: the wrapped donor set, the bottle, containing 50 cc. of 5 per cent sodium citrate, sealed with a metal cap and protected by a hood, the numbered transfusion card and tag, and the muslin sack for the small tubes with the donor's cell suspension and serum.

temperature and the temperature one, two, three and four hours after transfusion, together with a definite statement as to the presence or absence of a chill, urticaria or other form of reaction. When these cards

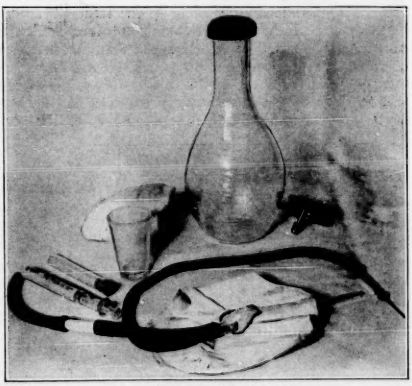

Fig. 6.—Donor set unpacked, cap removed from bottle, ready for insertion of the vent tube. Note that the two arms of the tube pass through the two holes in the cloth shield, which is packed with the outer side uppermost, minimizing the possibility of contamination during insertion. After insertion the rubber band is slipped down around the neck of the bottle. The small wrapped package contans a sterile metal cap with which to seal the bottle when the blood has been drawn. The syringe for procaine hydrochloride is packed in the Wassermann tube for protection against breakage.

are returned to the bank they are checked by the assistant resident in charge. All admitted and suspected reactions are investigated.[3]

3. It is planned to discuss the statistics of the bank's work and an analysis of transfusion reactions when a larger number of transfusions shall have been given than the 600 or more in the first six months since reorganization.

DRAWING BLOOD

The house officer takes to the ward the donor set (fig. 5), a blood bottle in which there is already 50 cc. of 5 per cent sodium citrate for the 500 cc. of blood usually drawn, a numbered transfusion card to which is attached a tag with the same serial number and a small cloth sack. A brief history is taken from the donor, the skin, pharynx, heart and external genitalia (of males) are examined, the blood pressure is taken and the appropriate data are entered on the transfusion card in the spaces provided. The antecubital fossa is cleaned with iodine and alcohol, a tourniquet is applied, and with procaine hydrochloride a tiny bleb is raised in the skin over the vein. The procaine syringe and needle are in the donor set (fig. 6) and the procaine is provided in the ward. Eventually a central bleeding room may be established adjacent to the bank, but at present the bleeding is done in the treatment room in the ward of the ostensible recipient for whom the debt was incurred. It is not necessary for the operator to wash, to scrub or to wear sterile gloves. It is far safer for him to remember that his hands are not sterile and to observe the elementary precaution of avoiding contact with the needle, the prepared skin or the portion of the vent tube which enters the bottle. The bottle is inverted once so that citrate will moisten the metal plunger, which in turn, as the metal cap is withdrawn, moistens the sides of the hole in the rubber bushing for easier subsequent insertion of the vent tube. The metal cap is removed from the bottle with the cloth cover in place so that the cap may be freely handled without fear of contaminating the rubber bushing, cap and cover being removed together. The vent tube is held between the fingers at its junction with the rubber tubing, the muslin shield protecting the portion which must remain sterile. The vent tube is inserted through the rubber bushing and the shield held in place by the rubber band as shown in figure 7. Pumps are available for application of negative pressure, but our house officers usually prefer to use oral suction and are permitted to do so. A 16 gage needle is used. While the blood is being drawn, the flask is tilted so that its rotation will produce an accentric motion of the blood. When 500 cc. of blood has been drawn the tourniquet is released and a hemostat clamped across the tubing at its connection with the vent tube. If there has been any clotting in the process of drawing the blood it has taken place in the rubber tubing, and the clamp prevents the clots from entering the bottle. The needle is withdrawn, the vent tube removed from the bottle and the bottle capped with the separately wrapped metal cap included in the set (the small wrapped object in figure 6). The clamp is now released and the blood in the tubing permitted to flow into three tubes, all contained in the set. On one there is already pasted a request slip for the STS (serologic test for syphilis) across which is stamped a red stripe. The stripe permits the Wassermann laboratory technicians to separate the blood bank STS reports from the 400 daily other reports, thus avoiding much delay. Whole blood is added to the second tube for serum, and in the third two drops of blood are added to 8 cc. of 0.85 per cent saline solution, a small flask of which is found on every ward venipuncture tray. The last two tubes are labeled with adhesive tape and placed in the cloth bag, which is hung from the neck of the bottle. The number tag is also hung from the bottle, and on this tag the technician later adds the donor's group. The STS tube is sent to the Wassermann laboratory. The

Fig. 7.—Bottle with donor vent tube in place, rubber bushing kept sterile by cloth shield. The gauze plug visible in the glass connecting-tube is an air filter in the suction line.

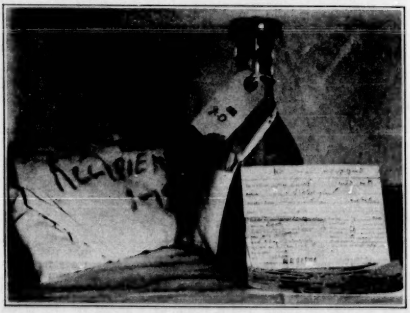

Fig. 8.—Recipient set, bottle of blood, transfusion card, and cross matching report. This is all that is taken to the ward for administering blood. The small cloth bag and contained tubes are left behind in the bank.

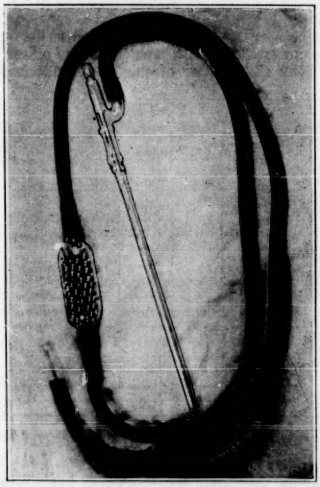

Fig. 9.—Recipient set unpacked. The stainless steel ball bearings are contained in a filter chamber incorporated in the tubing line. The vent tube is longer than that used in drawing blood (figs. 12 and 13).

transfusion card is placed in the unclassified rack on the bank board (fig. 1), the bottle of blood is put in the refrigerator and an entry is made in the service book.

Since the pictures of the apparatus were taken we have made several changes. The citrate is added to the empty blood bottle before sterilization, and there is therefore no need for the medicine glass. The donor set is now a much smaller package and, like the recipient set, is compactly wrapped in a cardboard box cut down from a box for rubber gloves. For a time two small test tubes were included in the donor set, one for the STS, the other containing a weighed amount of sodium oxalate so that from a single tube of oxalated blood the bank technician derived both cells and serum. This plan did not prove to be worth the additional work entailed.

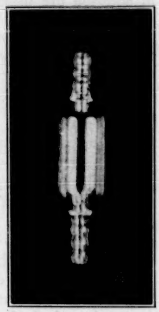

Fig. 10.—Filter chamber, showing funneled inlet, two hole outlet in glass tube projecting from the bottom.

GROUPING AND MATCHING BLOOD

The cells are grouped microscopically by the petrolatum sealed hanging drop method. High titer grouping serums are used, and in ordinary practice groupings may be read at once, although occasionally a group B or an AB will be found to agglutinate very slowly, so that we make a practice of checking the grouping after twenty minutes. When the grouping has been checked and the STS report received and pasted on the transfusion card, the card is placed in the proper group column.

When blood is needed for a transfusion there are sent to the bank two tubes, one containing the patient's clotted blood, the other two drops of his blood suspended in 8 cc. of 0.85 per cent saline solution. We require each tube to be labeled with adhesive tape. The request slip accompanies the samples. The patient's blood group is determined and his blood cross matched with the oldest available blood of the same group and race. If the same group is not available, or a good matching is difficult to achieve, we use group O blood. Matchings are agitated for fifteen minutes and permitted to stand fifteen minutes longer before being read. In acute emergencies we feel justified in shortening these periods. Although we demand that a matching show no agglutination or hemolysis on either the "major" or "minor" side when donor and recipient are of the same group, we disregard the minor (donor's serum-recipient's cells) side when using group O blood for recipients of groups A, B or AB, since almost invariably there is immediate agglutination. All matchings, whether done by the technician or at night by a house officer, must be approved either by an assistant resident or by the bacteriologist in charge of the laboratory of the Biological Division.

GIVING BLOOD

The house officer takes to the ward (fig. 8) the recipient set, the bottle of blood, the transfusion card and the attached matching report after making an entry in the service book. The small tubes with cells and serum are left behind for recheck in the event of a reaction. We have followed the lead of other blood banks and administer our blood unwarmed except for exposure to room temperature during preparation for the transfusion. It may be noted parenthetically that in the surgical service we have for almost a year given fluids at room or at icebox temperature, with no discernible ill effects. Occasionally, however, cold blood or intravenous fluids will cool the skin over the receiving vein below the point of comfort. Numbers, names and groups having been checked as required, the bottle is inverted several times and the metal cap is removed. Because the blood is drawn warm, hermetically sealed, and then placed in a refrigerator, there is formed a partial vacuum and the inrush of air during removal of the metal cap is audible. The long vent tube is now inserted, the bottle inverted and air driven from the system. It is necessary to hold the inverted bottle down and the tubing up, these positions being slowly reversed in order that the bead filter chamber may fill slowly and not trap air (figs. 9, 10 and 11). If the vein is not large, house officers are advised to use a syringe and needle for the venipuncture, to twist off the syringe and replace it with the glass adapter of the transfusion set. We have discarded the old metal three way stopcocks as unsatisfactory because they leaked, were expensive and were almost impossible to clean. A transfusion of 500 cc. is expected to take at least half an hour. By stripping the tubing this quantity of blood may be forced into the vein of a patient in collapse in ten minutes. House officers are responsible for the prompt return of all apparatus to the bank.

Blood which passes the expiration date or which is found to be serologically unsuited is not wasted. It is used in various laboratories for culture mediums and for experimental work in which human blood or plasma is required. Our own experiments with various filters have utilized a considerable quantity of this blood. In addition, it must be recalled that an "unused" blood may have been matched several times against patients in the operating or delivery rooms and so served a protective function for those patients, although it never found its way into their veins. We now separate the plasma from out of date blood to be used in cases of shock without hemorrhage, as well as in hypoproteinemia. A previous step in this direction was the use of plasma from currently usable bank blood for such cases, and its replacement in the bottle with 5 per cent dextrose, the resultant suspension of red blood cells in 5 per cent dextrose being designated for transfusions in patients in whom anemia is the principal indication.

Fig. 11. — System filled with blood, ready for insertion of needle. The end of the vent tube projects above the level of the blood (fig. 13).

THE APPARATUS

The vent tubes used for taking and giving blood are identical except for their lengths. The portion of the tube which passes through the rubber bushing contains an inner channel through which there is a flow continuous with that in either end of the straight tube. This channel is surrounded by a jacket which has two small inflow orifices inside the bottle and connects with the right angled tube externally. For drawing blood

(fig. 12) a short tube is used so that the flow of blood from the tube end may be observed. The rubber tubing containing the gauze filter unit, through which suction is exerted, is put on the angled side arm and the blood flows through the straight tube, while the holes in the jacket permit the evacuation of air from the flask. In administering transfusions (fig. 13) very long tubes are used so that when the flask is inverted the tube end projects above the level of the blood. In these recipient sets the blood flows out of the bottle through the jacket and out the side arm, while air enters the flask through the straight tube. If the precaution is taken of capping the projecting tube end with a finger while inserting it and inverting the bottle, blood will be prevented from dripping down the air intake tube. We have found the capillary vent tubes supplied by the makers of this apparatus unsatisfactory for the administration of blood, although quite satisfactory for the administration of other fluids.

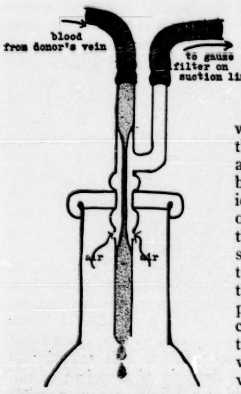

Fig. 12.—Detail of vent tube as used in drawing blood. Blood flows through central channel. Air is evacuated from flask through the vent holes connecting the jacket with the side arm. Short tube permits observation of the rate of flow of the blood.

THE FILTER

The realization that in all stored blood there is invariably found, within a few hours, a considerable quantity of fibrin shreds and clots, regardless of the freedom from clots of the blood when first drawn, led us to consider the use of filters. We have assumed, to begin with, that these shreds and clots are undesirable and perhaps harmful, although, aside from the obvious possibility of mechanical interference with the smoothness of the transfusion, that point has yet to be proved. Some idea of the quantity of clot to be found may be had from figure 14. The total in the three glass dishes was contained in one 500 cc. sample of blood just twelve days old. The filter recommended for our flasks by the manufacturers requires removal of the rubber bushing, which we were anxious to avoid. We have tried the commercial stainless steel mesh filter. It is very efficacious but so constructed that whenever there is much clot the flow of blood is reduced to a trickle. The use of beads was suggested by Boland and his co-workers,[4] who described a method of blood transfusion proposed for the British army. They placed glass beads in the vessel into which the blood was to be drawn. We have objected to this arrangement on the ground that introduction of the beads at this point, with the subsequent unavoidable shaking of the bottle, produces hemolysis as well as a tendency to defibrinate the blood. At first we introduced the beads into the bottle at the time of administration of the blood. The beads were contained in a 2 foot length of stiff rubber tubing, with an inside diameter less than twice the diameter of the beads. The tube was filled with beads and the two ends were joined by a coupling of slightly larger stiff tubing. The tubing was uncoupled, care being taken to keep the ends sterile, the small end was fitted to the hole in the rubber bushing of the bottle, and the beads were permitted to run in. Glass beads were used at first. These chip and break to an extraordinary extent and in addition are difficult to empty from tube to bottle. We then used stainless steel ball bearings, of three-sixteenths inch diameter, and about 175 to 185 in each tube. The glass beads, however, are less expensive than these metal ones and filter as well. The beads of either type form a layer an inch or more thick above the outlet holes and through this maze clots must find their way in order to descend through the tubing. Large clots are caught on the surface of the beads, small clots are trapped in the column of beads. The outlet holes are a few millimeters above the inside of the rubber stopper, and this difference is enough to hold any glass dust or chips which may settle out during the transfusion. None appeared to go through the tubing in experiments in which, with the use of old chipped glass beads, all the blood emerging from the needle was collected in a vessel and repeatedly diluted with water, decanted and finally examined for glass. Figure 9 shows the method of using the steel ball bearings at present employed. The small filter chamber is of pyrex glass. There is a tapered inlet just large enough for the bearings and an outlet consisting of two holes on the side of a glass tube projecting upward from the bottom of the chamber. The volume of the chamber is 15 cc., and we employ a quantity of bearings displacing 12 cc.

If desired, a few cubic centimeters of air may be trapped in the chamber, converting the filter inlet into a drip tube.

Figure 14 illustrates one of many similar filtration experiments. Five hundred cc. of 0.85 per cent saline solution was added to a flask of 500 cc. of citrated blood twelve days old. The diluted blood was divided into two equal portions and an even distribution of any clot which might be present assured by repeatedly pouring the blood back and forth. The watch glass labeled *a* contains the clot obtained by running the contents of one of these blood flasks unfiltered through a regular transfusion tubing with glass adapter but no needle. The blood was caught in an Erlenmeyer flask and repeatedly diluted and decanted until only clear water, with the clots pictured, remained. Glass *b* shows all the clot that came from the second half of the blood when the steel bearings were used by the old method.

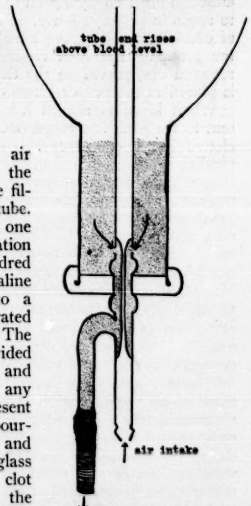

Fig. 13.—Detail of vent tube as used in giving blood. Blood flows through the vent holes and out through the jacket to the side arm. Air enters through the central channel. Long tube permits the end to be above blood level, avoiding entrance of blood into the central channel.

4. Boland, C. R.; Craig, N. S., and Jacobs, A. L.: Lancet **1**: 388-391 (Feb. 18) 1939.

Glass *c* shows the quantity of clot the steel bearings filtered out. The finer dispersion of the clot in glass *a* is due to its having run through a small bore glass adapter, whereas that in glass *c* was washed out of the bottle. The total amount of clot in the 500 cc. of blood is a little greater than the total amount in the three glasses, for the tubing traps some. The amount of clot shown is about average. The new filter is even more effective, for it uses the same number of bearings in a column of smaller cross section and greater height.

The apparatus should be so cleansed and cared for that no transfusion reactions may be attributable to it. The procedure employed removes all fibrin and blood pigment, and in every instance the last operation is a thorough rinsing with a large quantity of freshly distilled water. After each transfusion the set is completely dismantled—the work of a moment, since all joints are secured merely by rubber bands. All apparatus is washed in running tap water, the tubing, vent tubes and adapters being attached to cold water spigots for from ten minutes to half an hour. These parts are then boiled with an excess of sodium carbonate for fifteen minutes, all air having been exhausted from the tubing to permit it to fill with the solution. A forceful stream of tap water is run through again and then a generous quantity of distilled water. The distilled water is obtained fresh daily and its container and the siphon delivery tube are washed daily and cleansed with distilled water. The beads are emptied from the filter chamber by forcing a stream of water through the outlet. The beads are then cleaned like the glassware. Sulfuric acid-potassium dichromate cleaning solution is used for all glassware whenever indicated. The bottles are scrubbed with green soap, then washed in succession with tap water, 4 per cent sodium triphosphate, tap water, 0.5 per cent hydrochloric acid, tap water and distilled water. The rubber bushings and metal caps are scrubbed with green soap, a hand brush being used, and washed with tap water and distilled water. The excess of distilled water is permitted to drain off, and the sets are wrapped and autoclaved within two hours of the time of washing. In the course of the washing the rubber tubing is stretched and squeezed by hand, inch by inch, to loosen any clot. As soon as the tubing is found to have lost its elasticity it is replaced. We use davol, pure gum, black seamless tubing, one-fourth inch by one-sixteenth inch. In the preparation of this tubing it is filled with water, thus expelling all air, and then attached to an apparatus which simultaneously percolates a continuous stream of boiling 2 per cent sodium hydroxide through the lumen and bathes the exterior in the same solution. After forty-five minutes of this treatment the tubing is flushed with tap water for ten minutes, washed through with 1 per cent acetic acid, then washed with tap water over night and finally with distilled water.

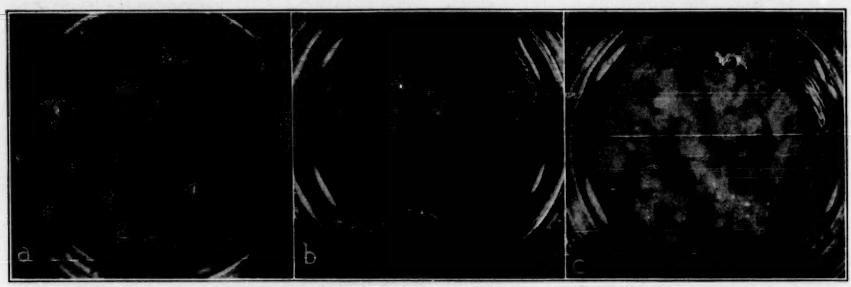

Fig. 14.—Clot contained in 12 day old blood: a, clot recovered from unfiltered half of 500 cc. bottle of 12 day old blood. *b*, clot recovered from half of 500 cc. bottle of 12 day old blood, filtered through steel ball bearings. *c*, clot filtered out by the ball bearings.

COMMENT

The plan presented has proved a workable one in the administration of the two banks, white and Negro, which we operate, each supplying the blood for from fifty to sixty transfusions a month. There has been general satisfaction with the functioning of the bank despite the wide range of innovations. A part of the benefit from the bank derives from the standardization of transfusion apparatus and technics in the several services, which had all been divergent, and from the centralization of the preparation and care of apparatus. The apparatus now in use is simpler and safer than that previously in use in any service. The transfusion sets are small but complete, the system is almost entirely closed and the sealing of the bottles is air tight. A satisfactory filter has been provided which is efficient without obstructing the flow of blood.

The principal advantage of the bank is, of course, the increased availability of blood. The only criterion for the administration of blood is the patient's need for it. House officers are encouraged to ask the bank for blood at any time, without thought of repayment, since it is our understanding of the function of a blood bank that it must place blood in the category of a biologic therapeutic agent to be used whenever indicated, just as specific serums, hormones or vitamins may be ordered. In many instances the convalescence of patients with low hemoglobin content is hastened by transfusions which augment natural hemopoiesis but which formerly would have been dispensed with as "unnecessary" because of the attendant difficulties. We are also now able to make blood available more rapidly than before. A number of patients owe their lives to this fact.

A recent case offers a dramatic illustration:

At 1:30 a. m. a farmwife aged 17 was brought to the accident room after a 35 mile ambulance drive. She had been known to be more than three months pregnant, had had constant pain the entire period and, with a sudden access of violent pain, had collapsed four days before. After three days of seeming gradual recovery she collapsed again on the day of admission. When seen, she was moribund. She showed air hunger and a

deathly pallor and was almost pulseless. The lower part of the abdomen was rigid, the culdesac was boggy and a large mass involved the left adnexa. With death a matter of minutes we felt justified in administering unmatched group O blood, and within ten minutes of her arrival she was being given a transfusion. With blood still running into her veins she was moved to the operating room, where without interruption she was given a second 500 cc. transfusion during the operation, this time with compatible group A blood. Operation disclosed the expected ruptured tubal pregnancy. During the operation a third transfusion, again with compatible group A blood, was begun, and by the time of its completion the patient's condition had improved gratifyingly. Despite the massive transfusions the hemoglobin content of her blood was still so low the following morning that a fourth 500 cc. transfusion was administered.

The most heroic efforts, under the old conditions, could not have provided this quantity of blood soon enough. The protection of being matched for transfusion can now be more easily extended to a greater number of patients, with no inconvenience or worry to the family in the large number of cases in which transfusion subsequently proves unnecessary. No ward patient need pay for blood from a professional donor because his family can provide no compatible donor. By the same token, the hospital has been spared the considerable cost of transfusions for patients unable to supply donors or to pay the fees of professional donors.

OBSERVATIONS ON 793 CASES OF ACUTE PURULENT OTITIS MEDIA

WITH CHEMOTHERAPY IN 396 CASES

WESLEY C. BOWERS, M.D.
NEW YORK

I have analyzed a series of 793 cases of acute purulent otitis media from my private practice and from the otolaryngologic service of St. Luke's Hospital in the past three years. About 90 per cent of the hospital cases I have seen personally; in about 45 per cent of them the age was 10 years or less, making a fairly equal number of children and adults. It should be noted that St. Luke's is a general hospital, that many of the patients in the series were admitted because of other medical conditions which were complicated by otitis, and that the presence of other pathologic conditions always makes otitis more severe, more prolonged and more difficult to cure.

Before proceeding to my series of 793 cases of otitis media, it may be interesting to trace the incidence of mastoidectomies for the past ten years, in an effort to discover the influence of chemotherapy (chart 1). The year 1930 (ninety-five mastoidectomies) would seem fairly comparable with 1937 (ninety-two mastoidectomies).

It is somewhat difficult to arrive at the correct incidence regarding the years 1937, 1938 and 1939. My impression is that in 1937 the ear infections were comparatively mild, while in 1938 and the first nine months of 1939 they were far more virulent. Hence the drop in the number of mastoidectomies in 1938 seems to me even more significant than the figures indicate.

Of the total 793 cases, in 599 recovery occurred without operation; of this number 231 were selected because of their short duration and because myringotomies could be performed in the hospital, where the condition of the ears could be observed daily until the discharge ceased. The average duration of discharge in the 113 cases in which chemotherapy was received was nine days; in the 118 in which it was not received the duration of discharge averaged seventeen days. Thus it would seem that chemotherapy reduced the duration of discharge by about 50 per cent and increased the number of recoveries from 67 to 81 per cent.

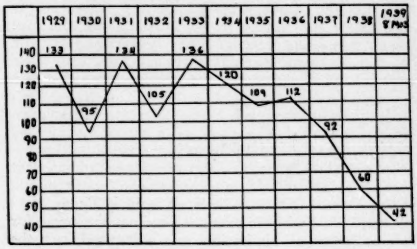

Chart 1.—Distribution of 1,138 mastoidectomies in a ten year period (lacking four months in 1939). This shows a marked drop since 1936, when chemotherapy seems to have changed the picture.

Mastoidectomy was performed in 194 (24 per cent) of the 793 cases of acute purulent otitis media in the hospital (chart 3). Since many of the patients were admitted in an emergency condition, or had had mastoiditis for days or weeks before admission, or were very ill with other diseases on admission, and had had chemotherapy of unknown quantity before admission, a selection was made of 387 cases, in none of which the ear condition was of more than a few days duration. Of these 387 cases, in 207 the condition was treated with chemotherapy and in twelve (5.7 per cent) mastoidectomy was necessary; in 180 the condition were not so treated, and of these twenty-four (11 per cent) came to mastoidectomy. This would indicate that when the drug is given early, before mastoid softening has taken place, the number of cases requiring operation is reduced one half. Incidentally, it shows that of cases properly treated 11 per cent required mastoidectomy while of those taken as they came 24 per cent required it. This is a reduction of over 50 per cent.

BACTERIOLOGY

The bacteriologic study of mastoiditis is not always satisfactory. Culture of material taken at operation showed the various bacteria occurring in the following proportions:

Streptococcus haemolyticus	52 per cent
Nonhemolytic streptococcus	10 per cent
Pneumococcus group III	5 per cent
Staphylococcus	15 per cent
No growth	18 per cent

Although 18 per cent of the cultures were negative, infection was present in the mastoid in all these cases; frequently the applicator was covered with pure pus from the mastoid cavity. There were also reports of "no growth" from pure pus in nasal cultures. In such cases the organisms must have been inert or have become anaerobic at the places from which cultures were taken. Again, it is not uncommon to obtain a culture of staphylococcus or streptococcus from the ear and later find pneumococcus group III in the mastoid culture. It has also been noted in sinus infections that

while the culture from the nose may show Staphylococcus albus, the organism in the membrane removed at operation may be Streptococcus viridans or Streptococcus haemolyticus.

Fifteen per cent of the mastoid cultures were reported to show staphylococcus. This is hard to understand, for in all my experience I have seen only three cases in which I felt justified in calling the condition staphylococcic mastoiditis. In these the cells were filled with thick, tenacious pus similar to that seen in a carbuncle; there was a sharp demarcation at the inner plate, to such a degree that the cells with their contained cones of pus came out as a single mass, leaving the inner table clean as though it had been dissected free. I do not know how to explain this 15 per cent unless it is a question of mixed infection in which the staphylococcus outgrew the more serious organism, or unless it was due to contamination in transmission. Staphylococcus is so frequently present in the external auditory canal that a culture taken with a swab is unreliable even when the canal has been treated with alcohol. Culture taken from the knife is far more reliable. Some doctors believe that there is a staphylococcic mastoiditis, much resembling a staphylococcic bacteremia, very resistant to treatment, requiring several operations before complete recovery. However, to me it seems probable that the greater part of the 15 per cent staphylococci and the 18 per cent "no growth" in the tabulation really represent streptococci with a few pneumococci of group III. If this is correct, it is evident that more mastoiditis is caused by streptococci than is shown in this tabulation and that if the ear culture shows no growth or a growth of staphylococci, it is justifiable to resort to chemotherapy in the presence of a severe clinical picture regardless of the bacteriologic data.

COMPLICATIONS IN 194 MASTOIDECTOMIES

No deaths occurred when the mastoiditis had been uncomplicated on admission.

There were two deaths from meningitis. Both patients on admission to the hospital had fulminating meningitis with lateral sinus thrombosis. One of them, with a Streptococcus haemolyticus infection, was operated on and received 218 grains (14 Gm.) of sulfanilamide; the other, with a pneumococcus group III infection was operated on, received 120 grains (8 Gm.) of sulfanilamide by Levine tube and died within twenty-four hours.

In one case of sinus thrombosis, double mastoiditis, cloudy spinal fluid, facial paralysis on the right and paralysis of the left sixth nerve, all present on admission, the invading organism was pneumococcus group III. Sulfanilamide was given the week preceding hospitalization, for pneumonia, and again during the first few days following operation. Papilledema persisted for over two months postoperatively; in this case recovery occurred.

In one case of petrositis, sixth nerve paralysis and cloudy spinal fluid (1,300 cells; 62 per cent polymorphonuclears in spinal fluid) recovery followed operation and chemotherapy. In this case culture of material from the ear showed nonhemolytic streptococci; from the mastoid, no growth; a smear from the spinal fluid showed gram-negative cocci.

Two cases of labyrinthitis responded well to chemotherapy. In one case of facial paralysis, occurring two weeks after operation, recovery took place.

There were also three cases of retropharyngeal abscess, two cases of parotid abscess and forty-nine cases of pansinusitis.

In order to illustrate the deceiving picture produced by chemotherapy, I will briefly mention some experiences:

Early in my experience with sulfanilamide, four patients with hemolytic streptococcus infection, in which immediate operation seemed indicated, were given the drug for twenty-four hours. At the end of this time they were so much improved that operation was deferred. The middle ear entirely cleared up within a week; there was no mastoid tenderness or fever and x-ray examination showed no breaking down. The patients were therefore discharged as cured, with great jubilation. Within ten days three of the four returned with a temperature of 104 F. and the middle ear again in very bad condition. Mastoidectomy in each case revealed a large perisinal and epidural abscess; the remainder of the mastoid cells were filled with granulations and softened bone. With these experiences in mind I have continued the use of sulfanilamide for a full week after symptoms have disappeared and since doing so have had no such recurrence. However, these cases illustrate the danger of temporizing with mastoiditis when the aural condition indicates mastoidectomy.

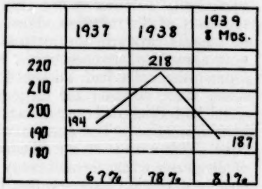

Chart 2.—Distribution of recoveries without operation in a three year period. Of 793 cases of acute purulent otitis media, in 399 recovery occurred without operation. The average duration of discharge following myringotomy on 231 ears was nine days for 113 ears with chemotherapy and seventeen days for 118 ears without chemotherapy. It would seem that chemotherapy reduced the duration of discharge 50 per cent, and the number of recoveries increased from 67 to 81 per cent.

In my series of 194 mastoidectomies, recovery occurred in 192 which were uncomplicated on admission. Death occurred in two of the six complicated cases. It is evident from these figures that mastoidectomy is a safe procedure. It is equally evident that complicated mastoiditis is a dangerous condition. One must conclude that it is safer to operate, when the indications are strong, than to depend on chemotherapy.

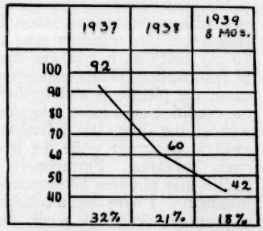

Chart 3.—Distribution of mastoidectomies in a three year period. There were 194, or 24 per cent, mastoidectomies in 793 cases of acute purulent otitis media—a diminution from 32 to 18 per cent in three years. There were 387 myringotomies done in the hospital for acute purulent otitis media of not over two days' duration; of 207 with chemotherapy in twelve, or 5.7 per cent, mastoidectomy was done; of 180 without chemotherapy in twenty-four, or 11 per cent, mastoidectomy was done. It would seem that infected middle ears which were opened promptly and treated by chemotherapy responded 50 per cent better than those not given chemotherapy. (Incidentally, it shows that of the cases properly treated 11 per cent required mastoidectomy; while of those taken as they came, 24 per cent required mastoidectomy, a diminution of over 50 per cent being due to proper treatment.)

Mrs. de M. had undoubted mastoid involvement, the roentgenogram showing marked cloudiness. The invad-

ing organism was pneumococcus of group III. Sulfapyridine was given but, as it caused severe nausea and vomiting, sulfanilamide was substituted. The middle ear cleared up and the drum returned to normal. Operation was advised but the patient preferred to take a chance without it. During the following seven months she was able to live her normal life, but she experienced so much discomfort from the sensation of fulness in the ear and vertigo that she regretted her decision to forego operation. Another x-ray study, eight months after the onset of the infection, showed what appeared to be an abscess cavity in the mastoid picture. The patient now agreed to an operation. No abscess cavity was found; the cells had thickened membrane and were softer than normal; the large cells posterior to the sinus had thickened membrane and considerable new bone formation. The antrum was walled off by hard bone. This case is an apt illustration of the difficulties of diagnosis when chemotherapy is used. The appearance at operation indicated that the lesions in the mastoid would probably have resolved without operation, yet there was persistent discomfort and vertigo for eight months during which period there was always danger of a fulminating meningitis. The x-ray examination before the operation showed what was apparently an abscess.

Since the advent of chemotherapy streptococcic mastoiditis may be just as misleading as that caused by pneumococcus group III. That is, the clinical picture may indicate improvement while the mastoid bone is being seriously involved with very few symptoms to show it. This may be due to the fact that the drug acts best in very vascular areas, such as the middle ear, but is not effective in an area where the circulation is poor, such as a necrotic area in bone. Whatever the reason, chemotherapy causes the clinical picture in other types of mastoiditis to resemble that caused by pneumococcus group III.

My most dramatic experiences have been in connection with pneumococcus group III. It is indeed fortunate that this organism does not appear more often (5 per cent) as it produces the most deceptive form of mastoiditis. When sulfanilamide is given in these cases, the picture is still further complicated, making the condition even more dangerous and difficult. Even without the drug, this infection will often appear to yield to treatment while the lesion in the mastoid is really increasing. Furthermore, the presence of mastoiditis may not even be suspected prior to the onset of meningitis. I have seen a considerable number of cases of acute purulent otitis media due to this organism in which recovery occurred under chemotherapy, but when this infection is present in an acute ear condition it is not safe to assume that recovery will occur for at least a month, even though the drum and hearing return to normal. The following cases illustrate the typical clinical course of pneumococcus group III infections of the middle ear:

A previously described patient, J. M.,[1] had a myringotomy which showed pneumococcus group III in both middle ears. In about two weeks the infection cleared up and drums and hearing returned to normal. About four weeks later facial paralysis developed on the right side. Roentgenograms showed only a slight cloudiness of the right mastoid. Culture from the right mastoid at operation showed "no growth," although the cells were filled with granulations. Symptoms of labyrinthitis developed, with restlessness, Kernig's sign and opisthotonos; the spinal fluid showed 360 cells. An abscess was found in the petrous bone, from which pneumococcus group III was obtained, although the mastoid culture had been sterile. This patient recovered. It must be noted that in this case the drum membrane and hearing had returned to normal. The present use of chemotherapy may produce a similar situation in any infection of the middle ear.

J. R. M., a child, was very ill with pneumonia and was given chemotherapy for that condition. A swelling appeared behind the right ear, and the following day there was discharge from both ears. The pneumonia in this case was apparently regarded as more important than the ear condition, as there was no complaint about the latter. The child, with a temperature about normal, had double mastoiditis and right sinus thrombosis, with facial paralysis on the right, paralysis of the left sixth nerve, marked nystagmus, opisthotonos and a double Kernig sign. Culture revealed pneumococcus group III.

In pneumonia there is seldom any complaint of pain in the ears even though they are full of pus. This is doubly true when chemotherapy is used, as the drug seems to have some analgesic effect and, with the present treatment, one may therefore expect a picture similar to the pictures just presented, not only with pneumococcus but with any organism found in the middle ear.

These experiences lead to the conclusion that chemotherapy is of decided advantage in the treatment of acute purulent otitis media provided it is started early, before the condition of the mastoid has progressed to softening of the bone. Where such softening has occurred, the use of chemotherapy so changes the clinical picture as to make it almost impossible to determine the presence of progressive bone destruction and to ascertain the advisability of operating. The clinical picture is still by far the most reliable guide to pathologic conditions in the mastoid, although roentgenograms are an invaluable aid and at times afford the only diagnostic sign. In doubtful cases it is well to stop administration of the drug for a time in order to get the true clinical picture.

CHEMOTHERAPY AS USED IN THIS SERIES

At first chemotherapy was used with great caution, the drug being stopped at the first sign of toxicity. My associates and I obtained some marvelous results in adults with a dosage of 10 grains (0.65 Gm.) of sulfanilamide four times a day—a total of 40 grains (2.6 Gm.). Later we gave 10 grains with sodium bicarbonate every four hours, day and night. Much less attention was paid to unpleasant symptoms. The results were even more beneficial. Today, our general rule for dosage is to give during the twenty-four hour period an amount totaling slightly less than 1 grain (0.06 Gm.) per pound of body weight up to 90 pounds (41 Kg.). During the first twenty-four hour period we double, triple or quadruple the amount for the first two or three doses, depending on the severity of the infection and the type of patient. As to the form of the drug used, our preference is for sulfanilamide. It is, of course, essential to watch the urine and blood carefully. At first a daily blood count is taken; later, if no bad effects are observed, the interval is lengthened to once in two days while the drug is being taken, with an additional count one week after it has been discontinued.

In the beginning sulfanilamide was used; later azosulfamide was substituted but with less good results. Sulfapyridine was used for pneumococcus group III infections, successfully in a number of very severe cases of otitis media. However, the symptoms caused by the latter drug, such as headache, disorientation, delirium and vomiting (simulating meningitis) or vertigo (simulating labyrinthitis) resemble so closely the syndrome

1. Bowers, W. C.: Two Cases of Petrous Bone Abscess, Laryngoscope 38: 412 (June) 1928.

of complicated mastoiditis that we were forced in some cases to discontinue its use in order to differentiate. In some such cases sulfanilamide was substituted, with occasional improvement of the symptoms.

We have had no permanent ill effects, despite the fact that not infrequently we have seen the cell count and hemoglobin drop alarmingly. In such cases there has always been quick response to discontinuance of the drug and to blood transfusions.

INDICATIONS FOR CHEMOTHERAPY

Chemotherapy is indicated if, at the time of myringotomy, the fundus has a very bad appearance or if myringotomy reveals pus or fluid under great pressure, with or without the presence of mastoid tenderness and regardless of the results of culture. Chances of prompt resolution are 50 per cent improved and the chances of operation are 50 per cent diminished by the use of the drug.

If the fundus does not seem to be in bad condition and the pressure on myringotomy is not great, chemotherapy may be deferred, but if subsequently the ear does not improve promptly chemotherapy should be started at once, regardless of the culture. If complications intervene, the drug should be used immediately regardless of culture, but never without removing the focus. If there is doubt about the situation, the drug should be temporarily discontinued in order to get the correct clinical picture.

After mastoidectomy the wound should be free from pus and the temperature should return to normal within two or three days. If sulfanilamide is given during this early postoperative period and the fever persists, accompanied by symptoms simulating meningitis or labyrinthitis, the picture is very alarming. For this reason, it is preferable not to give the drug postoperatively in uncomplicated mastoiditis.

The drug is not effective in uncomplicated chronic mastoiditis or in cases in which there have been previous severe attacks of acute purulent otitis in the same ear. The drug must be continued for at least one week after the disappearance of all aural symptoms.

The practice of giving chemotherapy without proper supervision of blood and urine cannot be too strongly condemned. During administration of the drug there should, as a rule, be daily examinations of the blood—never less frequent than every two days—and a final examination should always be made one week after the drug has been discontinued.

CONCLUSIONS

As a result of my experience in the treatment of this series of cases, I have arrived at the following conclusions: If chemotherapy is given early, before bone destruction occurs, the duration of discharge is diminished by about 50 per cent and the number of mastoidectomies is diminished by about 50 per cent.

When the clinical picture strongly suggests mastoidectomy, it is safer to operate.

After uncomplicated mastoidectomy, it is better not to give the drug.

Complicated mastoiditis requires intensive chemotherapy.

At times it is necessary to stop the drug in order to obtain the true picture, as the drug cures the middle ear while progressive bone destruction is taking place in the mastoid.

Chemotherapy has unquestionably added greatly to the confidence of physicians in their ability to conquer acute otitis media and mastoiditis. They have always been apprehensive of meningitis as long as the ear continued to discharge.[2] In the twenty-five years prior to 1936, only seventy-six recoveries from streptococcic meningitis were reported in the literature; since 1936 over 200 recoveries have been reported. Mortality has dropped from 97 to 35 per cent. This is a great comfort and a signal achievement. Yet one should be ever mindful of the fact that chemotherapy may also so obscure the clinical picture that there is an increased danger of the unheralded sudden onset of grave complications, such as meningitis, and that all the symptoms of mastoiditis may disappear under the influence of these drugs, while the lesion is actually spreading.

Pasteur has said "There is no peril in expressing ideas a priori when they are taken as such and can be gradually modified, perhaps even completely transformed according to the result of the observation of facts." In experiments with chemotherapy one is justified in stating that its beneficial results are now established beyond the a priori state, but observations must still be continued with minds open to every possibility of modification and transformation. Another valuable aid to the practice of otolaryngology has been found, but an aid which has changed the clinical picture of mastoiditis and its complications so much that it produces a false sense of security and demands a new interpretation of the clinical picture.

17 East Sixty-First Street.

THE USE OF ZINC PEROXIDE IN MALIGNANT LESIONS

BROMLEY S. FREEMAN, M.D.

HINES, ILL.

Keeping a patient with a necrosing carcinomatous ulcer free from exudate and foul odor is a well known problem in the hospital and at home. All surface ulcers are infected to some degree. The cancer necrosis should not be blamed altogether for the foul odor and profuse discharge. The combination of necrotic cancerous tissue and infected tissue is responsible. Treatment should aim not only to eradicate the neoplastic growth but also to disinfect and deodorize the lesion. The abundant necrotic tissue, the poor blood supply and the inadequate drainage offer an excellent opportunity for growth of organisms. Postirradiation lymphedema, fibrosis and endarteritis add to the devitalization of the tissue. The usual methods of antisepsis in conjunction with surgical excision and irradiation may suffice to control a large percentage of carcinomatous ulcers, but some advanced lesions, in the face of constant treatment, become steadily worse and are given up as hopeless. This report is concerned with the latter group.

These lesions are usually deep radionecrotic ulcers with or without residual malignancy. Histologic descriptions of radionecrotic lesions include scanty polymorphonuclear reaction, macrophage infiltration, progressive scarring with dense acellular fibrous and elastic tissue and progressive endarteritis obliterans. Grossly, the striking features are the chronicity of the lesion, the firmly fixed and deeply anchored central

2. Anderson, E. D.: Hemolytic Streptococcus Meningitis, J. A. M. A. **108**: 1591 (May 8) 1937. Gray, H. J.: Streptococcic Meningitis, J. A. M. A. **105**: 92 (July 13) 1935.

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slough, the atrophic anemic granulations and a thin coat of fibrin covering all.[1]

Meleney's work on the use of zinc peroxide in the successful treatment of phagedenic ulcers, foul mouth and neck infections and other specific types of gangrene stimulated us to apply this substance to exudative

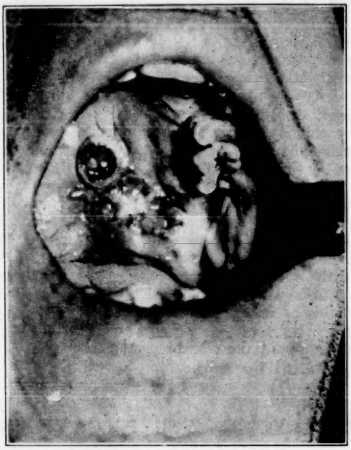


Fig. 1 (case 1).—Recurrence of palatal neoplasm.

necrosing lesions of cancer on the body surface. The properties of zinc peroxide have been well established by the writings of Meleney.[2] It will suffice to state that zinc peroxide is a preparation which when suspended in distilled water liberates and maintains for a prolonged period a constant potential of oxygen having a definite bactericidal action in vitro and in vivo on certain anaerobic and micro-aerophilic organisms, as well as aerobic hemolytic streptococci and pneumococci.

Infection following radionecrosis results in delayed healing and subsequent necrosis of the granulation tissue making it a factor of great importance. Phemister[3] has shown that bone killed by irradiation, if kept in normal function and free of infection, will act much as a bone graft. If injury, loss of function or infection takes place, that portion of the bone is sequestrated. The picture is similar with tendon and cartilage. If conditions are aseptic, a slow repair will take place. If any element of infection is present, further sloughing occurs. Infection invariably accompanies necrosis, and the absorption of toxins from the ulcer is a large factor in the debility, malaise and cachexia. To care for the patient, the infection must be considered, whether or not residual neoplastic activity is present. Ashhurst[4] has stated that patients frequently have died of sepsis arising in the ulcerated surface of a malignant tumor while the tumor itself had very little to do with it. Moreover, radiologists have noted that infected tissues have decreased radium sensitivity.

Bacteriology of Thirty-Five Nonhealing Radionecrotic Ulcers During Routine "Antiseptic" Treatment Before Institution of Zinc Peroxide Dressing

Organism	Occurrence in 18 Lesions Connected with Intra-Oral Cavities	Occurrence in 17 External Lesions	Total
Streptococci, anaerobic or micro-aerophilic	13	13	26
Streptococci, aerobic	0	4	4
B. necrophorus	10	8	18
B. fusiformis	14	1	15
Staphylococcus aureus	6	7	13
Staphylococcus albus	2	1	3
Diphtheroids	11	2	13
B. pyocyaneus	0	7	7
E. coli	0	4	4
Yeast	5	2	7

The management of these cases affords difficult problems because of the chronicity of the ulcer, the associated pain while sloughs are present, the difficulty in controlling infection while necrotic tissue remains, the

(Fig. 2 (case 1).—Immediately after irradiation.

toxemia and the very foul odor. Radical excision is obviously the treatment of choice,[5] but because of the extent of the ulcer, the situation and the patient's general condition, often this cannot be done.

1. Scott, R. K.: Radionecrosis: A Clinical Study, M. J. Australia **2**: 1-8 (July 7) 1934. Wright, R. D.: Pathological Manifestations in Radionecrosis, ibid. **2**: 8-14 (July 7) 1934. Wolbach, S. B.: A Summary of the Effects of Repeated X-Ray Exposures on the Human Skin, Am. J. Roentgenol. **13**: 139-143 (Feb.) 1925.

2. Meleney, F. L.: Zinc Peroxide in the Treatment of Micro-Aerophilic and Anaerobic Infections with Special Reference to a Group of Chronic Ulcerative, Burrowing, Nongangrenous Lesions of the Abdominal Wall, Ann. Surg. **101**: 997-1011 (April) 1935; Zinc Peroxide in Surgical Infections, S. Clin. North America **16**: 691-711 (June) 1936. Meleney, F. L., and Johnson, B. A.: The Prophylactic and Active Treatment of Surgical Infections with Zinc Peroxide, Surg., Gynec. & Obst. **64**: 387-392 (Feb., No. 2 A) 1937; Further Laboratory and Clinical Experiences in the Treatment of Chronic, Undermining, Burrowing Ulcers with Zinc Peroxide, Surgery **1**: 169-221 (Feb.) 1937. Meleney, F. L.: The Use of Zinc Peroxide in Oral Surgery, Internat. J. Orthodontia **23**: 932-940 (Sept.) 1937; The Prophylactic and Active Use of Zinc Peroxide in Foul-Smelling Mouth and Neck Infections, Ann. Surg. **107**: 32-38 (Jan.) 1938. Johnson, B. A., and Meleney, F. L.: The Antiseptic and Detoxifying Action of Zinc Peroxide on Certain Surgical Aerobic, Anaerobic and Micro-Aerophilic Bacteria, ibid. **109**: 881-911 (June) 1939.

3. Phemister, D. B.: Radium Necrosis of Bone, Am. J. Roentgenol. **16**: 340-348 (Oct.) 1926.

4. Ashhurst, A. P. C.: Surgical Conception of Malignant Disease, in Nelson's New Loose-Leaf Surgery, New York, Thomas Nelson & Sons, 1937, vol. 2, p. 155.

5. Davis, J. S.: Clinical Illustrations of Deep Roentgen-Ray and Radium Burns, Am. J. Roentgenol. **29**: 43-78 (Jan.) 1933.

Bacterial synergism has been demonstrated in the laboratory and observed clinically.[6] Physicians have recognized that mixed infections despite their frequent "nonpathogenic" organisms are more serious than infections with but a single species of organism. Conversely, clinicians have observed that serious infections, espe-

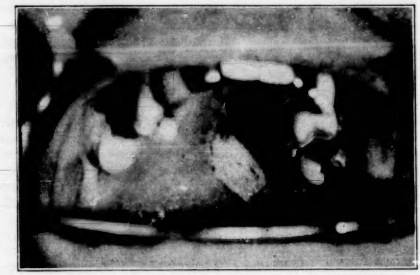


Fig. 3 (case 1).—After treatment with zinc peroxide, showing well defined ulcers and freedom from slough.

cially those involving necrotic and phagedenic lesions, yield more than one species. The combination of certain species of bacteria performing certain functions which neither can perform alone has been called synergism. Virulence may be enhanced; nonpathogenic species in combination may become virulent. Nonhealing ulcers show a variety of organisms, not a few of which may be regarded as saprophytes. Synergistic action should be kept in mind in studying tissues in which mixtures of organisms are frequently found.

Thirty-five radionecrotic ulcers with and without persistent malignancy were studied bacteriologically. Anaerobic as well as aerobic studies were made. Only those ulcers were selected which were under routine antiseptic treatment but remained foul, necrotic and painful and showed no evidence of healing. In every instance more than one organism was found.

The lesions may be divided into eighteen connected with the oral mucous membrane—palate, sinuses, alveolar ridge, tongue, floor of mouth, tonsil, or external lesions with intra-oral extension—and seventeen external lesions of the body surface not so connected. The only bacteriologic difference between the intra-oral and external lesions was the presence of Bacillus fusiformis and diphtheroids in the former and of Escherichia coli or Bacillus pyocyaneus in the latter.

Anaerobic or micro-aerophilic streptococci were found in twenty-six lesions. Of these five were hemolytic. Aerobic streptococci, all nonhemolytic, were found in four lesions, all external. Bacillus necrophorus was found in eighteen cases, of which six showed hemolysis. Bacillus fusiformis was found in fifteen lesions. Only one intra-oral lesion contained neither B. necrophorus nor B. fusiformis. This had an almost pure culture of anaerobic nonhemolytic streptococci. The most frequent combinations were anaerobic nonhemolytic streptococcus and B. necrophorus with either B. fusiformis and diphtheroids in the oral lesions, or with staphylococcus and B. pyocyaneus in the external lesions. Cultures were made during the course of treatment and it was noted that the anaerobes were the first to disappear, but after the zinc peroxide dressing had been omitted for from three to seven days they were the first to reappear.

The odor disappeared on the application of zinc peroxide [7] but reappeared if the dressing was omitted for a few days. If the dressing was applied for two weeks, from three to seven days was necessary for the reappearance of the characteristic odor and the positive anaerobic cultures. Early in the course of study we found that lesions without odor had a negative anaerobic culture.

The method of application of zinc peroxide is more fully described in several of Meleney's articles. The wound is cleaned with peroxide and saline sprays, free necrotic tissue is gently removed, and the wound is again sprayed. A preparation of zinc peroxide (previously sterilized by baking at 140 C. for four hours in a dry oven) is mixed with an equivalent amount of sterile distilled water and mixed thoroughly with an asepto syringe. More water is added until the paste has a consistency of about 40 per cent cream, and this is applied by the syringe to the entire lesion. Fine mesh gauze is soaked in the suspension and applied throughout the lesion and into all the sinuses and interstices of the wound. The whole is covered with sterile pads soaked in distilled water and the wound is packed against evaporation with several layers of petrolatum or zinc oxide gauze. The dressing is secured by a larger pad and bandages. At no time has it been necessary to dress a wound twice in one day; occasionally dressings have remained on for forty-eight hours. If the patient is to receive irradiation, the wound is mechanically cleaned with peroxide and saline solution, and sterile

Fig. 4 (case 2).—Postirradiation ulcer after treatment with zinc peroxide. Note absence of slough, epithelizing of nuchal region and sharply delimited edges.

saline packs are placed for protection before treatment. After irradiation the wound is irrigated and zinc peroxide is applied. Because of the evident possibility of secondary irradiation from any zinc salt remaining in

6. Meleney, F. L.: Bacterial Synergism in Disease Processes, Ann. Surg. 94: 961-979 (Dec.) 1931.

7. After disappointing results with other products, we have used only the special medicinal brand of zinc peroxide, Z. P. O., of Merck & Co., Inc. This product has not yet been considered by the Council on Pharmacy and Chemistry of the American Medical Association.

the wound, it is necessary to use large quantities of fluid and to insist on complete removal of all particles of zinc peroxide before the patient receives his irradiation. (In some cases it is next to impossible to wash off all the zinc peroxide, but to date no abnormal changes have been noted after irradiation.)

Fig. 5 (case 3).—Postirradiation lesion four days after beginning of zinc peroxide treatment. The original lesion showed necrotic tissue at both upper and lower lesions level with the skin. At this time trismus was still present.

In the treatment of oral lesions (lesions of the cheek, tongue, gums, floor of mouth and palate) and bone necroses, the zinc peroxide is applied as a thick paste every three hours and a 1 to 3 suspension is used as a mouth wash. Before and after meals the lesion is washed with sterile saline solution. When trismus is present, as in several cases of radionecrosis following irradiation of carcinoma of the alveolar ridge, we have found it advantageous to apply the zinc peroxide cream using as a syringe a large bore glass drinking tube attached to a bulb. Throat lesions receive a spray of a 1 to 2 suspension and again a paste is directly applied to the lesion. These are reapplied as often as necessary. As Wintrup [8] suggested, we have advised patients not to swallow the preparation. However, several have done so and have reported no ill effects either immediate or late, although Meleney has noted occasional mild nausea.[9]

In lip and mouth cancers, while the patient is receiving his preoperative dental prophylaxis, we have been using zinc peroxide as a mouth wash. This has not been continued during the irradiation period because of the possible danger of secondary irradiation, as it is very difficult to remove zinc peroxide from between the teeth. Immediately after the course of irradiation has been completed, the patient is placed on routine treatment with zinc peroxide mouth washes. No definite data as to the prevention or mitigation of radionecrosis have as yet been obtained.

8. Wintrup, J. P.: Preliminary Report on Use of Zinc Peroxide in Mouth Infections, Surgery 4:124-131 (July) 1938.
9. Meleney, F. L.: Personal communication to the author.

REPORT OF CASES

CASE 1.—C. M. had previously been treated at the Tumor Clinic for a squamous carcinoma (nonkeratinizing) of the hard palate with a total of 7,300 roentgens through ports directed to the right and left side of the face and through a mouth cone. Four months later a recurrence at the posterior aspect of the tumor was noted, and five radon seeds totaling 746 millicurie hours were inserted. Two weeks after the implantation there was noted a steady dull pain in the palate. Progressive increase in the pain caused the patient to apply for admission, stating that for the preceding month he had been unable to eat or sleep.

An extremely tender deep necrotic ulcer measuring 1 by 3 cm. and extending into the left maxillary sinus was noted. There was a very fetid odor despite all attempts at mouth hygiene, and the patient required large doses of sedatives. No recurrence of the carcinoma was found, and when a culture showed the presence of B. necrophorus, anaerobic streptococci, diphtheroids and B. fusiformis, zinc peroxide paste was applied three times daily plus a mild mouth wash. After two days all sedatives were withdrawn and the patient had no pain or odor and slept and ate well. On discharge two weeks later, the lesion had sharply defined margins, was nontender and had no odor. Healthy granulations appeared at the border. Instructions were given to continue zinc peroxide paste at home.

CASE 2.—H. L. R., for a basal cell carcinoma arising on the nuchal region, had received irregular roentgen and surgical treatment, type unspecified, for ten years. On admission to the Veterans Administration Facility the patient presented a 12.5 by 7 cm. deeply ulcerated lesion on the nuchal and supra-

Fig. 6 (case 3).—Ten days after the first application of zinc peroxide dressings; no odor was present. The defect opened into the oral cavity.

spinous areas. In 1937 a block excision was done and radon seeds were implanted totaling 2,870 millicurie hours because the excision was thought to be incomplete, as the tumor infiltrated near the apex of the lung around the brachial plexus and the subclavian vein. A total of 21,600 roentgens was given over a period of four months.

In March 1939 the patient was readmitted with complaints of inability to move his neck, severe pain of the entire left

shoulder and neck, loss of 20 pounds (9 Kg.) and general malaise. Recurrence of the nuchal margin was excised with a Bovie, and a typical massive foul ulcer which extended to the scapula was given azochloramid dressings three times daily. No change was noted for four months, and culture showed B. necrophorus, anaerobic streptococci and a few staphylococci. Zinc peroxide dressings were instituted, and two weeks later

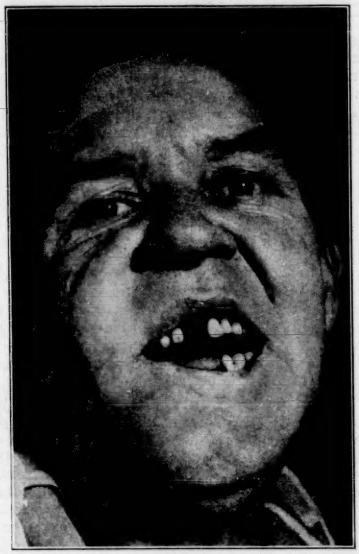


Fig. 7 (case 3).—Ten days after the start of treatment, showing absence of trismus.

the lesion showed no evidence of odor, healthy granulations were filling in the ulcer and the patient could move his neck freely. One month later the reentrant angle was completely filled in, the scapula was entirely covered with healthy granulations, and the nuchal portions of the wound were epithelized. Biopsies have been negative, and the patient is awaiting plastic reconstruction.

CASE 3.—A. P. R., after a creosote burn of the face and mouth in February 1932, complained of dryness of the lips and an elevation on the lower lip. After several electrodesiccations he was referred to this hospital and in February 1933, after a diagnosis of keratinizing squamous cell carcinoma of the lower lip on the right, he was given 900 millicurie hours by external pack, radon implants totaling 400 millicurie hours and 16,000 millicurie hours to the cervical regions bilaterally. This was completed March 7, 1933, and the patient was discharged.

Follow-up appearances were normal, but on March 3, 1939, he was admitted for what proved to be a keratinizing squamous cell carcinoma on the right lower alveolar ridge with extension to the buccal mucosa. At this time he received 3,450 roentgens of high voltage x-rays to the right side of the face and 1,550 roentgens to the face and neck on the right. There was a persistent lesion on the buccal mucosa, and on May 5 radon implants totaling 952 millicurie hours were given and the patient was discharged.

The follow-up appearance through September was normal, but in October the patient had pain in the mandible and was seen by a local radiologist, who instituted fifteen treatments of undetermined dosage in as many days, using a hundred kilovolt machine. One month after the irradiation, the entire right half of the face swelled and complete trismus was evident. During this period the weight dropped from 257 to 190 pounds (from 117 to 86 Kg.), and large doses of morphine were necessary to control the pain. He was given a few weeks to live.

December 21 the patient was admitted to the Veterans Administration Facility on a stretcher. He looked critically ill and was very weak. He could sip water through a hiatus in his teeth, but a definite trismus was present. On the right cheek there was a foul slough in the plane of the face measuring 4.5 by 3 cm. Below the mandible there was a similar area of slough measuring 2 by 2.5 cm. The odor was so foul that personnel usually quite hardened could barely force themselves to enter the room. Patients in the neighboring wards complained of the "overflow" odor. A culture was taken and zinc peroxide dressings were immediately started. Sloughing necrotic tissue was removed as it appeared free, and zinc peroxide paste was applied by a narrow take to the sloughing buccal surface. The dressings were done daily but the intra-oral paste was applied four times daily. In two days the lesion was fairly well deodorized. In four days the patient felt well enough to be up in a chair to be photographed. The second picture was taken ten days after admission, when the wound was clean, the trismus and tenderness completely gone and the patient free from pain. Culture showed the characteristics of anaerobic saprophytes, and biopsy showed necrotic muscle with large clumps of bacteria. No narcotics have been given since his third day and none have been requested. He has gained 10 pounds (4.5 Kg.), and a peripheral neuritis due to dietary insufficiency has slowly disappeared.

CASE 4.—C. D. was admitted with a history of multiple pilonidal sinuses treated for twenty-one years by serial operations. Two years before entry x-ray examination revealed osteomyelitis of the sacrococcygeal region and the coccyx was removed. One year previously he noted pain, swelling and hemorrhage around the internatal cleft and treated this with salve. Six months before admission pain was so severe that nine roentgen treatments (factors unknown) were given at weekly intervals.

Examination revealed scarring and ulceration of the medial aspect of both buttocks with a 10 × 5 × 1 cm. punched out irregular ragged defect extending to the rectum. Biopsy

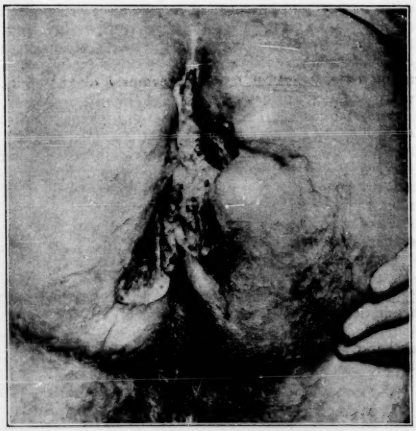


Fig. 8 (case 4).—C. D.; postirradiation defect of the buttocks. Note the absence of inflammatory erythema. Residual carcinoma was present at the upper portion. Note the proximity to the anus.

revealed squamous cell carcinoma. The patient was given a total of 5,475 roentgens of superficial x-rays over a period of two months. During the postirradiation period pain became extremely severe, and the patient required large amounts of narcotics. Despite antiseptic treatment with various chlorine compounds, the wound became very foul and the profuse discharge sickened even the patient. Biopsies were done and subacute

and chronic inflammation was reported. The condition progressed and the patient was unable to turn or move without excruciating pain and could tolerate no dressings save nupercaine ointment. Because of the profuse discharge, pads were changed six to seven times daily.

Four months after the course of irradiation, material from the wound was cultured and anaerobic streptococci, B. necrophorus, and B. coli were obtained. Zinc peroxide dressings were applied once daily. Immediately the drainage ceased and the odor became less pronounced. Cultures made one week after institution of the zinc peroxide therapy revealed nonhemolytic anaerobic streptococci, B. necrophorus, and B. pyocyaneus. One week later the culture showed only B. coli. At this time it was necessary to mix a small amount of butyn with the dressing as the patient complained of burning. This was later discontinued. The slough cleared; the overhanging edges, circumareolar erythema and foul discharge gave place to a deep but sharply delimited ulcer with a clean base on which evident recurrences were seen. Biopsy showed recurrent tumor, and irradiation was again started. Before using zinc peroxide, the patient required one-fourth grain (0.016 Gm.) of morphine every three hours; two weeks later he required codeine at only irregular intervals.

COMMENT

Cultures taken have shown scant or no growth after the lesion has been treated with zinc peroxide for a period of two weeks. This is in accord with the work of Johnson and Meleney,[2] who found zinc peroxide to be almost specific against the three predominant organisms noted in this study. Twenty-four hours after the first application of zinc peroxide, there was a definite loss of odor in all but one case. Bacteriologic studies showed but little change, and the loss of odor is attributed to oxidation and/or absorption of the bacterial metabolites. Drainage has been markedly lessened. Patients previously requiring from three to seven dressings daily needed but one application of zinc peroxide. Exquisitely tender nonhealing postirradiation ulcers with a surrounding aura of erythema soon showed clearly defined margins, a disappearance of the erythema and loss of hypersensitivity. The necrotic central slough lessened and was easily removed, leaving a clean granulating base. Several lesions previously diagnosed as postirradiation ulcers with initial biopsies showing "acute and chronic inflammation" were given a period of zinc peroxide treatment. After the treatment diagnosis of persistent malignancy was made grossly and verified histologically. Although I have no definite data, it is my impression that the postirradiation ulcers healed more rapidly under zinc peroxide than previously noted.

Pain can be judged only by the amount and frequency of narcotics required. Invariably the dosage and frequency of the narcotics were decreased to an appreciable degree. Most of the patients required nothing but mild sedatives after the regular institution of the zinc peroxide dressing. The freedom from embarrassment and the return to normal social contacts and interests together with newly acquired confidence and hope have been noted uniformly.

SUMMARY

Thirty-five cases of radionecrotic ulcers with and without persistent tumor growth have been studied bacteriologically. A predominance of anaerobic organisms has been observed. Zinc peroxide has been used clinically in these cases with control of fetor, infection and pain. Existing infection in irradiation ulcers may obscure the persistence of tumor tissue not only grossly but histologically. The prophylactic use of zinc peroxide has been undertaken to prevent or diminish the frequency or degree of radiation bone necrosis in lesions of the mucous membrane.

RETRUDED CHINS

CORRECTION BY PLASTIC OPERATION

GORDON B. NEW, M.D.
AND
JOHN B. ERICH, M.D.
ROCHESTER, MINN.

No matter how slight or how marked may be the retrusion of a chin or mandible, such an abnormality invariably disturbs to some degree the function of the jaws and the symmetry or normality of facial contour. Such being the case, it is obvious that in the treatment of any retruded mandible there are two objectives to be considered: the functional and the esthetic. While it is true that many operative methods will accomplish both of these objectives more or less satisfactorily, in this paper we are concerned chiefly with those surgical measures of a purely cosmetic nature which are intended to correct or improve the visible external deformity produced by a retracted mandible.

In recent years the esthetic results attainable by plastic procedures in the treatment of retruded chins are increasingly more satisfactory. We are convinced that such operations, alone or in conjunction with other measures, offer the most desirable results in many cases. However, we do not imply that plastic surgery extends a solution to every problem or even the majority of problems arising in the management of these defects of the lower jaw; the fields of orthodontia and oral surgery are indispensable. Even with a comprehensive knowledge of the therapeutic possibilities, the selection of the most suitable method or methods to be employed in correcting a retruded chin is frequently a difficult task. Naturally the choice is dependent on many factors but primarily on the cause and extent of the deformity and on the age, financial status and personal wishes of the patient.

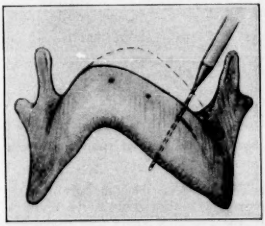


Fig. 1.—Fixation of a large cartilage implant to a retruded mandible in reconstruction of the chin: three holes placed about 1 cm. apart are drilled through the anterior portion of the lower jaw (see figure 2).

From an esthetic point of view, one conspicuous fault in some technical procedures designed to correct the external deformity resulting from a retruded chin is the failure of these operations to establish normal dental occlusion. Although we do not wish to engage in a discussion of the dental aspects of the subject, the fact that no other facial deformity is more intimately related to the occlusion of the teeth is worthy of emphasis.

It is well to remember that a significant association exists between dental articulation and facial contour. Embryologic and anatomic studies have shown that the development, eruption and ultimate position of the teeth in the dental arches determine the shape or form of the maxillary bones and, in turn, the conformation of the overlying soft tissues. It is evident, therefore, that the manner in which the dental cusps interlock is

From the Section on Laryngology, Oral and Plastic Surgery, the Mayo Clinic.

reflected in the features of every individual; even minor disturbances of occlusion will produce some degree of facial asymmetry or disharmony. In short, no face is perfect in contour unless the teeth are faultless in occlusion.

Very few patients with a retruded chin, regardless of the cause of the deformity, are free from malocclusion; as a matter of fact, the disturbed occlusion is usually most conspicuous. Consequently, one may rightly assume that plastic procedures capable of effecting entirely satisfactory esthetic results not only must produce a natural contour of the chin but also must establish normal articulation of the teeth; at least, such operations must create a semblance to normal dental occlusion.

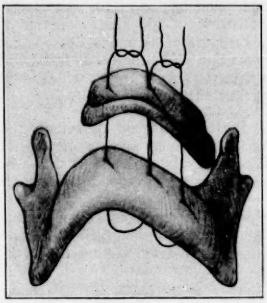


Fig. 2 (see figure 1).—Catgut sutures, inserted through the holes in the jaw, and the overlying cartilage implants, securely anchor the grafts to the mandible.

Much could be written on the psychologic value of correcting facial deformities such as the one under discussion, but the mental satisfaction which some persons experience after a reconstructive operation for a retruded chin is astonishing. There seems to be an inclination among many people to regard a retruded chin as a rather trivial deformity, but whether or not we consider it to be of little consequence does not alter the fact that in the patient's mind the defect is of extreme importance.

ETIOLOGY

A study of the etiologic factors which contribute to the production of a retruded lower jaw requires some familiarity with the physiologic changes that occur in the mandible during its development. As has been previously stated, the contour of the mandible is largely controlled by the growth, eruption and position of the teeth in the dental arches. As each tooth erupts, the jaws progress another step in development by expanding and changing in form to meet the physiologic requirements of support for the tooth when at rest and when subjected to the stresses of mastication. The conformation of the mandible, therefore, is continually being altered until its adult form is attained. Any agent which interferes with the normal forces of tooth eruption marks the beginning of a malocclusion, and all succeeding teeth that erupt occupy an unnatural position in the dental arch; this, of course, provokes an abnormal mandibular contour which is accentuated by the subsequent development of the lower jaw. Again, any factor which disturbs or arrests the growth of the mandible not only directly produces some bony deformity but also indirectly misdirects the normal growth of the lower jaw by creating a malocclusion. As a result of this process, the original deformity is increased year by year until the development of the mandible has been completed.

Since the etiologic factors which produce mandibular retrusion occur during the growing period of the individual when the jaws are undergoing a series of changes in development, the primary deformity can be expected to become gradually more pronounced. In most instances, then, a retruded chin or mandible is not a static deformity, which, when once established, remains unchanged; on the contrary, it is one of progressive severity. Not until the physiologic processes of development of teeth and bone have been completed does such a deformity reach its final proportions.

We have found it convenient to catalogue retruded chin and mandible deformities in the following manner: (1) retruded mandibles due to malocclusion, (2) retruded mandibles due primarily to factors which arrest the growth of the lower jaw and secondarily to the subsequent malocclusion, and (3) receding chins not associated with malocclusion.

The first group includes all mandibular retrusions resulting from a malocclusion and characterized by a distal relationship of the lower to the upper dental arches. A retrusion of the lower jaw is always an inevitable sequela of such malposition of the teeth. The common etiologic factors which favor the development of this type of deformity are inheritance, supernumerary teeth, abnormalities of the tongue, early loss of the deciduous teeth, long retention of deciduous teeth, late eruption of the permanent teeth, early loss of the permanent teeth, improper dental restorations, mouth breathing, and habits such as thumb sucking. Other causes are rickets, syphilis and diseases of childhood, which not infrequently upset the normal physiologic processes of growth and eruption of the teeth.

In the second group of retruded mandibles there are two sets of etiologic factors: primary and secondary. The primary factors produce an arrest in growth of the mandible or disturb its continuity or conformation. Such factors are osteomyelitis, temporomandibular ankylosis, unreduced fractures of the lower jaw, particularly bilateral subcondylar fractures, and birth injuries. Probably the most serious factor is ankylosis,

Fig. 3.—*a*, Retruded mandible of a girl aged 16 years: this deformity, which had been present for ten years, was secondary to an osteomyelitis of the right ascending ramus of the mandible; *b*, two pieces of costal cartilage were used to reconstruct the chin, but the lower lip is still retracted by its mucosal attachment to the lower jaw; *c*, lower lip has been brought forward by a prosthetic appliance inserted in a skin-lined pocket made between the lower lip and the alveolar process.

which greatly interferes with the function of the jaws and consequently produces an extreme degree of deformity and facial disharmony. The secondary etiologic factors relate to malocclusion which is a complication of the original deformity. As has been stated previously, malposition of the teeth for a period of years always accentuates the primary deformity of the mandible.

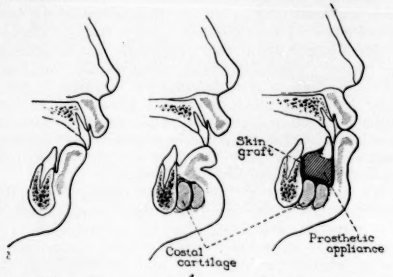


Fig. 4.—Median line section of face of patient shown in figure 3. *a*, preoperative appearance of retruded chin; *b*, two pieces of costal cartilage build out the chin, but the lower lip is still retracted by its mucosal attachment to the lower jaw; *c*, normal contour of lower lip produced by a prosthetic appliance.

The third group includes receding chins in which the teeth are in normal or rather accurate occlusion. Such defects occur rather infrequently and usually are of a congenital nature. An occasional one, however, is the result of malocclusion in which the teeth have been restored to normal articulation by orthodontic measures but in which some residual recession of the chin persists.

OBJECTIVE MANIFESTATIONS

Retruded mandibles vary so greatly in character that it is possible to present only those objective manifestations which are generally encountered. Mandibular retrusion may be a unilateral or bilateral deformity, more frequently the former. In all such defects of the lower jaw there is some degree of bony hypoplasia; often there is an actual loss of bone with much distortion of the anatomic landmarks of the mandible. Malocclusion is invariably present.

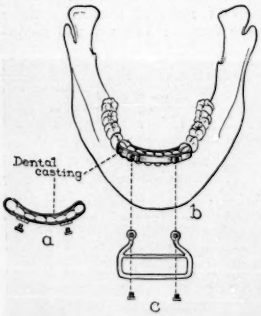


Fig. 5.—Appliance for fixation of a skin graft used in lining a pocket between the lower lip and alveolar process for reception of a prosthetic appliance: *a*, cast silver dental splint as seen from above; *b*, casting cemented to lower anterior teeth; *c*, wire frame for holding dental modeling compound around which the skin graft is wrapped; two small screws which anchor the wire frame to the casting also are shown.

Bilateral retrusion is characterized by posterior displacement of the entire lower jaw. Underdevelopment and recession of the symphysis accentuate the deformity. Occasionally the lower teeth possess a forward inclination, but those whose long axis is more or less vertical often come in contact with the mucous membrane of the anterior portion of the palate. When the defect is associated with mouth breathing, the upper anterior teeth are usually tilted forward, owing to a shortening and lack of development of the upper lip.

In unilateral retrusion the involved half of the mandible is diminished in length. As a result there is a flattening of the unaffected side of the face with an inclination of the chin to the affected side.

In all cases of mandibular retrusion, the most conspicuous feature of the deformity is the retraction or recession of the chin. This may be associated with shortening of the upper lip, asymmetry of the nasolabial sulci and other marks of facial disharmony. It is such distortion of features which primarily concerns the plastic surgeon.

TREATMENT

In the treatment of retruded chin and deformities of the mandible, many procedures have been advocated. They may be grouped as follows: (1) various types of osteotomy through the horizontal or ascending rami to lengthen or advance the mandible; (2) osteotomy through the horizontal rami associated with the use of bone grafts to lengthen the mandible; (3) cartilage implants inserted behind the head of the condyles for

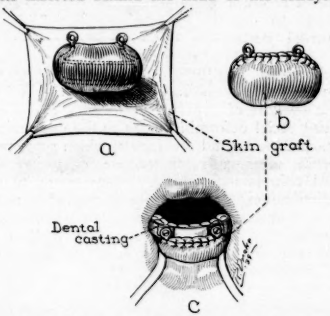


Fig. 6.—Application of skin graft to dental appliance: *a*, after packing dental modeling compound around the wire frame (fig. 5 *c*) and into the intra-oral pocket so as to form a stent for the cavity, a Thiersch skin graft from the inner aspect of the thigh is wrapped about this stent which previously has been coated with rubber cement or mastisol; *b*, the skin graft is sutured over the upper surface of the stent; *c*, the stent covered with the skin graft is inserted into the intra-oral pocket; this method gives perfect fixation of the graft during the healing period.

advancement of the mandible; (4) cartilage, bone, ivory and celluloid implants for building up the chin to normal contour; (5) prosthetic appliances requiring the use of intra-oral skin grafts for restoration of normal chin contour, and (6) orthodontic methods.

In the presence of this rather imposing number of recommended procedures, a consideration of the treatment of retruded mandibles may be somewhat confusing. Moreover, a critical but impartial comment of the value and shortcomings of these various methods is difficult to present, since it is not possible for one to have had personal experience with all of these therapeutic technics; no doubt, each procedure is advantageous in some cases. It is certain, however, that no single method is adaptable for the treatment of every patient with a retruded mandible.

Since a retruded chin or mandible is a deformity of progressive severity during the developmental period of the jaws, the sooner that treatment can be instituted in these cases, the more satisfactory will be the ultimate results. This, perhaps, is the most important consideration in the management of these lower jaw defects.

The majority of retruded mandibles essentially due to malocclusion can be entirely corrected by orthodontia if the disturbed dental articulation is observed early in the life of the patient. In fact, it is best if orthodontic measures can be set in operation before the permanent

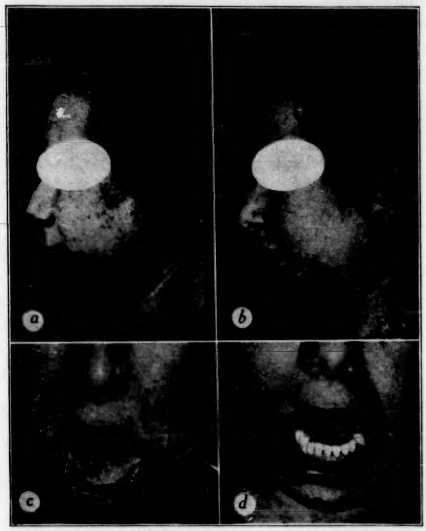


Fig. 7.—*a*, retruded mandible of a girl aged 15 years; this deformity had been present for five years and was secondary to an ankylosis of indeterminate cause involving the left temporomandibular articulation; *b*, following an arthroplasty, the deformity of the chin was corrected by the combined use of a cartilage implant over the symphysis and by an intra-oral prosthetic appliance; *c*, pocket prepared for reception of prosthesis, situated between the lower lip and alveolar process and lined with a Thiersch skin graft; *d*, prosthesis in position.

teeth erupt. If these defects are left untreated until adult life is reached, we believe that plastic procedures for establishing the normal contour of the chin are indicated. Adult patients with malocclusion whose lower teeth are displaced distally usually have but little functional disability as far as mastication is concerned, but we prefer not to increase this inefficiency of the jaws by the use of osteotomy to lengthen or advance the mandible merely for cosmetic purposes.

Retruding mandibles resulting primarily from an arrested bony growth are seldom rectified by orthodontic methods alone. However, in properly selected cases, very satisfactory results can be obtained by an osteotomy to lengthen or advance the mandible and, if feasible, may be followed by orthodontic measures to create normal dental occlusion. In cases of severe unilateral mandibular retrusion an osteotomy is contraindicated because, with the advancement of the anterior fragment, the condyle of the unaffected side is markedly rotated, which interferes with the normal movements of the joint. We have seen a few retruded mandibles which were so greatly underdeveloped and displaced so far posteriorly that no type of osteotomy could begin to lengthen or advance the mental portion sufficiently; in such cases, plastic procedures alone can be employed to correct the defect. It has been our experience that many patients with a retruded mandible decline to undergo an osteotomy because of the long but necessary period of fixation; for these individuals a pleasing cosmetic correction can be secured in a comparatively short time by plastic methods.

In cases in which a receding chin is unassociated with malocclusion, treatment by a plastic operation is the simplest and most effective means of repair.

In the majority of cases of mandibular retrusion in which plastic methods are indicated for correction of the visible deformity, a cartilage or bone implant may be employed for reconstruction of the chin. Some surgeons recommend ivory or celluloid for this purpose because such material can be cut with great precision and ease previous to the operation. However, we do not favor the use of foreign materials. If only a small graft is required, either costal cartilage or bone obtained from the crest of the ilium may be utilized with equally satisfactory results; but, when the degree of retrusion is pronounced, necessitating an implant of large dimensions, cartilage is the tissue of choice, since two or three pieces may be sutured one over the other to furnish an adequate bulk of material. The use of more than one thickness of bone, of course, is out of the question. We prefer fixed cartilage in which its elasticity has been diminished and its tendency to warp thus lessened.

Before attempting reconstruction of the chin with either a bone or a cartilage implant, it is advisable to obtain a plaster impression of the patient's face. From this impression one may prepare a wax model on which the chin can be built to proper proportions in modeling clay. Such representation of the portion of the chin to be constructed gives one a clear conception of the

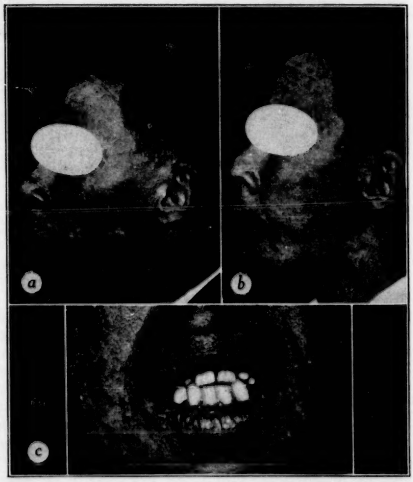


Fig. 8.—*a*, retruded mandible of a man aged 25; this deformity had been present for fourteen years and was the result of an osteomyelitis of the body of the mandible; *b*, owing to the marked degree of mandibular retrusion, the deformity could be corrected neither by an osteotomy nor by a cartilage implant over the symphysis; instead, a prosthesis was inserted in a skin-lined pocket between the lower lip and the alveolar process; *c*, artificial teeth of prosthetic appliance occlude with the upper anterior teeth, hide the patient's malposed lower teeth and establish a semblance of normal dental occlusion.

amount of bone or cartilage that will be required. Moreover, it permits of the preparation of lead patterns, which furnish the surgeon with specific measurements when cutting and shaping the implant.

Our patients who require a bone or cartilage graft for reconstruction of a retruded chin are given a general anesthetic. We administer nitrous oxide and ether through an intratracheal tube. The necessary amount of bone or cartilage is procured first and wrapped in a saline sponge until needed. If the defect of the chin amounts to nothing more than a slight recession and is not associated with malocclusion of the teeth, only a small skin incision in the submental region is necessary. Working through this incision with blunt forceps or dissecting scissors, a pocket is created over the symphysis for the reception of the graft. Meticulous care is taken to ligate all bleeding vessels, as hemostasis is most essential in maintaining the viability of the implant. The graft is next cut to the desired contour. In shaping cartilage, we employ only a scalpel; bone, however, requires the use of ronguers, files and bone-cutting forceps. These minor defects of the chin can be corrected nicely by a small graft which needs no fixation to the mandible. The implant is inserted over the symphysis through the skin incision and is immobilized in correct position by external pressure.

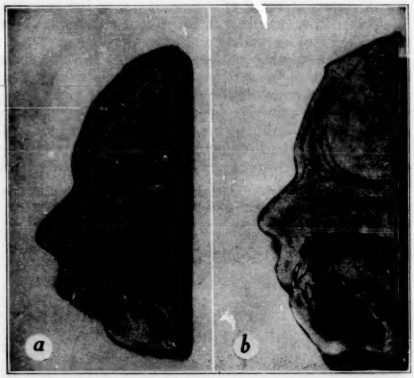


Fig. 9.—Median line section of face of the patient shown in figure 8; *a*, preoperative appearance of retruded lower jaw; *b*, normal contour of chin produced by prosthesis inserted into a skin-lined pocket between the lower lip and the jaw.

In cases of definite mandibular retrusion associated with dental malocclusion, a transverse skin incision is made through both submaxillary regions about 2 cm. below the lower border of the mandible. By undermining the soft tissues the anterior portion of the lower jaw is exposed. Careful dissection is required to prevent nicking through the oral mucous membrane, which would be disastrous. In the majority of these cases a comparatively large graft is required; this necessitates the use of cartilage. Often, one thickness of cartilage is insufficient to correct the deformity fully. If such should be the case, two or three pieces may be sutured together with fine catgut. While hemostasis is being established in the wound, the cartilage is cut to the desired shape and adapted over the symphysis. Grafts of any appreciable size require internal as well as external fixation. Consequently, with a motor driven drill, three holes about 1 cm. apart are made through the cartilage and underlying bone (fig. 1). Through these holes is inserted a piece of heavy chromic catgut which, when tied, securely anchors the graft in position (fig. 2). The soft tissues then are sutured over the implant and the edges of the skin are approximated with sutures of fine black silk. To prevent the collection of serum in the tissue spaces, a Penrose drain is inserted into the wound. External pressure is applied as a final step in the operation.

Since most patients with a retruded chin have considerable distal displacement of the lower teeth in relation to the upper dental arch, an acceptable cosmetic result is not effected by the mere use of a cartilage implant over the chin. On the contrary, the deformity is actually accentuated by the insertion of the graft because the lower lip accordingly is drawn back tensely by its mucosal attachment to the gum tissue about the lower anterior teeth (figs. 3 and 4). This retraction of the lower lip can be corrected by incising the mucosal attachment and inserting a prosthetic appliance between the lip and alveolar process in a skin-lined pocket (figs. 3 and 4). This appliance possesses artificial teeth which articulate with the upper anterior teeth, hide the malposed lower teeth and establish a semblance to natural dental occlusion.

To free the lower lip from its attachment to the lower alveolar process, sharp dissection is employed and an incision is made through the mucous membrane of the labio-alveolar sulcus from one bicuspid region to the other. This incision is carried down between the alveolar process and lower lip to the cartilage implant, care being taken not to expose the graft. The result of this procedure is the creation of a pocket which must be lined with skin for the reception of the artificial appliance.

The problem in skin grafting such a cavity is the difficulty in obtaining absolute fixation of the part during the healing period. Needless to say, immobilization is one important factor in successful skin grafting. We have developed the following technic for maintaining perfect fixation; without exception, this method has given excellent results: As a preliminary measure, a silver cast dental splint, which is cemented to the lower teeth, is required (fig. 5). On the anterior aspect of this casting are two threaded holes into which steel screws may be turned (fig. 5). A wire frame is also constructed which can be securely fastened by the screws to the casting (fig. 5). Following the preparation of the pocket between the lower lip and alveolar process, the wire frame is fixed to the casting and adjusted so as to lie in the center of the wound. It is then removed and is coated with a thin layer of dental modeling compound which has been melted in a flame. This compound, softened in this manner, will adhere perfectly to the frame, whereas a compound softened in hot water will not. After reattachment of the compound-covered frame to the casting, a cake of modeling compound is softened in hot water and packed down around the frame into the pocket. When hard, the compound and frame are securely united and together form a stent that is perfectly adapted to all the irregularities of the pocket. On removal from the mouth, the stent is coated with rubber cement or mastisol (a solution of mastic in benzene). A thin Thiersch skin graft (from the inner surface of the thigh), which is cut preliminary to the intra-oral operation, is wrapped about the stent and sutured along its upper surface (fig. 6). The stent covered with the skin graft is then inserted into the pocket and screwed to the dental casting (fig. 6). Adhesive plaster applied externally firmly fixes the lower lip to the stent, which is immovable. With the elapse of ten days, the stent may be removed and the pocket will be found to be lined perfectly with skin

(fig. 7). Inserted into this cavity is the prosthetic appliance which is attached by clasps to the lower teeth (fig. 7). The use of such an artificial apparatus combined with a cartilage implant insures a pleasing esthetic result in many cases of retruded chin (figs. 3 and 7).

We previously have mentioned patients whose mandibles are so greatly underdeveloped and displaced so far posteriorly that no type of osteotomy could begin to advance the mental portion of the jaw sufficiently (figs. 8 and 9). Even a cartilage implant would be useless in such a case, as it would be impossible to insert a large enough graft to bring the chin forward in a normal position. We believe that the simplest method of correcting the external deformity of such a severely retracted mandible is to use an intra-oral prosthetic appliance (figs. 8 and 9). The pocket to be lined with skin is extended down around the lower border of the mandible; this aids in the retention of the appliance. While lining this cavity with skin is similar to that already described, the prosthetic apparatus must be hollowed out to reduce its weight. For a few days after the appliance is inserted, the lower lip, which is stretched and tense, has a tendency to contract downward; to counteract this retraction, adhesive tape must be used to hold the lower lip in the desired position. As a matter of fact, about six months is required for the muscles of the lower lip to develop sufficiently to maintain the lower lip in a natural manner. By this method a very marked retrusion of the mandible can be effectively corrected in a short time; at least, the facial contour can be satisfactorily restored to normal proportions (figs. 8 and 9).

HEARING AIDS—TUBE OR CARBON?

AUSTIN A. HAYDEN, M.D.
CHICAGO

Electric hearing aids [1] today have become instruments of considerable importance and of many different designs. They may be for large audiences in theaters, schools, churches and auditoriums or for small groups in homes and offices. All of these use line current and are generally stationary. However, most instruments now are designed for individual use and only for the use of one individual, are of "vest pocket" size, use battery current and are wearable. For the last two years, these wearable instruments have been built with small ("peanut" size) radio tubes and crystal microphones. This is the most radical change in hearing aids since 1932.

The development and refinement of the electric hearing aid and the modern radio receiving set both began in 1922. The former has followed the latter quite closely in many ways and has been to a considerable degree dependent on it. Alexander Graham Bell's original electric hearing aid was the only instrument then (1922) available. It had to fit all cases, even though its air conduction receiver, carbon transmitter and battery had remained essentially unchanged for almost exactly fifty years.

During the next ten years (1922 to 1932) progress consisted largely of the development of refinements. Molded ear tips and smaller receivers were among the first improvements to be made. The ear tip held the receiver in the external auditory canal, obviating the necessity of strapping it on the head or holding it up against the ear with the hand. Amplifiers or boosters soon were added to the transmitter. Both of these, as well as the receivers, could peak amplification at the frequencies indicated by the audiogram, and mechanical filtering could level off the objectionable peaks inherent to carbon, thus converting a disadvantage into the decided advantage of selective amplification. Batteries were enlarged to three dry cells with greatly prolonged life.

In 1932 Hugo Lieber introduced his bone receiver. This carried sound vibrations around middle ears, whose oval windows were blocked, directly into the inner ear. The bones of the skull thus took the place of the air in the canal, to the enormous benefit of the otosclerotic whose auditory nerves were still even fairly good. Soon in place of the Bell type single air conduction instrument (fig. 1) for all cases, hundreds of carbon aids (fig. 2) of different acoustic characteristics were available for both bone and air conduction that could be fitted, within limits, by prescription from otologists' audiograms by the selection of proper transmitters, amplifiers, receivers and batteries to correct almost any hearing loss that was correctable. And otologists had learned from their audiograms that no two hearing losses were exactly identical.

Meanwhile in 1922 radio ceased being just "wireless," mostly for ships at sea, and came into American homes and offices as "receiving sets." About 100,000 sets and 2,000,000 tubes were sold that year. By 1939 these sales had increased to 9,000,000 sets and 100,000,000 tubes. In sixteen years radio had become a half-billion dollar business, just one of the industries that the vacuum, or thermionic, tube had made possible.

The family tree [2] of these tubes and the place that tubes for hearing aids occupy on it are extremely interesting. All of this modern development followed the pioneer research of Edison (effect, 1883), Fleming (valve, 1905), De Forest (audion, 1906) and many others, notably Henry, Maxwell, Herts and Marconi. "Peanuts" came into quantity production for general use in 1920, three element tubes for loud speakers in 1925 and small peanut tubes for hearing aids in 1932.

At first these tubes, still quite large, could be used only in desk sets, but, as the smaller type "peanuts" were developed and lighter equipment became available, wearable tube aids were possible. These eliminated the time honored carbon transmitter of Alexander Graham Bell.

By 1938 "peanuts" had become so small and so economical in current consumption they could be used in wearable aids (fig. 3) and could be energized by A and B batteries no larger and no heavier than those for carbons. Now, after nearly two years' experience, the question "hearing aids—tube or carbon?" is both pertinent and important. Although the mass of evidence necessary for well founded scientific judgment is not yet available, some comparisons and conclusions are possible.

Comparisons may be briefly summarized as follows:

1. Tubes amplify up to 6,000 or maybe to 8,000 cycles, carbons only to 3,300 or thereabouts. The former should correct perceptive hearing loss and restore the high tones of music and the overtones of both speech and music, on which the timbre

Dr. Hayden died, July 10.
Read before the Chicago Laryngological and Otological Society, April 1, 1940.

1. Stevens, S. S., and Davis, Hallowell: Hearing, New York, John Wiley & Sons, Inc., 1938, p. 59.

2. Electronics, New York, McGraw-Hill Book Company, October 1938.

of each so largely depends. Carbon aids cannot do this. That is the reason why music does not sound well over even the new telephone receivers (carbon).

2. Tubes give "straight line" amplification instead of the "distorted" amplification of carbons.

3. Tubes are more complex in construction, as yet less dependable in performance and more difficult and costly to buy, service and keep up.

4. Short circuits that will ignite are more apt to occur and burn clothing or person with 20 to 60 volt batteries (tube aids) than with 3 to 6 volt batteries (carbon aids).

5. Failure of the tube aid is sudden, unpredictable and without warning. A factory or a special service station is necessary for repair. The carbon aid deterioration is gradual and repairable usually by simple cleaning and introduction of new carbon without the necessity of attention from a factory or special service station.

In the cases in which nerve function is good, tube aids give brilliant results; but these are the very cases in which carbon aids were also accepted well. However, patients with severe perceptive loss above 3,000 cycles—the point at which the pain threshold falls so rapidly—often experience discomfort and frequently do not obtain satisfactory improvement in hearing. These are the patients who physicists reasoned should be helped most by the straight line, high frequency amplification of tubes.

The reason for the failure of the tube aid to help these persons with perceptive loss is probably the position and diminished size of their auditory area.[3] This is displaced to the left on the audiogram. Low frequencies are retained, but the high tones to the right are lost. It is a generally recognized principle in fitting hearing aids that the response curve of the instrument must be kept within the auditory area. When this is not done and the amplification of the "straight line" crosses the upper limit of the auditory area, which is the pain threshold, discomfort occurs that rapidly becomes actual pain, if the maximum intensity of the instrument is turned on. In other words, the auditory areas of many of these persons with perceptive loss simply cannot accept the amplification the tubes can produce at the high frequencies.

On the other hand, those with conductive loss do not experience this difficulty and accept tubes well, but frequently not any better than carbons except in frequencies above 3,300 cycles, which is of course extremely important for music and speech overtones.

Extraneous noise, unavoidable in carbons, is much less in the tube aids. To a person with good ears this would seem at first thought to be a great advantage, but hearing aids are designed for ears that do not hear well. Consequently this noise is inaudible to them and therefore not objectionable.

Both tube aids, which are new, and carbon aids, which are old, are being constantly improved. The entire satisfaction that many who are hard of hearing derive from the use of tube aids is well known and unquestioned.

One of the "big four" manufacturers of hearing aids, however, makes only carbon aids. That the development in carbon receivers is constant is evidenced by the fact that the new telephone receivers—from 500 to 2,500 cycles instead of from 500 to 1,000 (the old type)—are a great improvement; and the fact that there are 400,000,000 telephones in the world means that a tremendous amount of research will continue to be done in carbon equipment. Whether the ultimate in hearing aids will be a descendant of Edison's electric light bulb and De Forest's radio tube or a very greatly refined development of Alexander Graham Bell's carbon hearing aid coming essentially as an outgrowth of his telephone, time alone can tell. Carbon instruments have been and still are the model T of hearing aids. From these data, from clinical experience and from contact with otologists, physicists, hearing aid manufacturers and patients the following conclusions seem warranted:

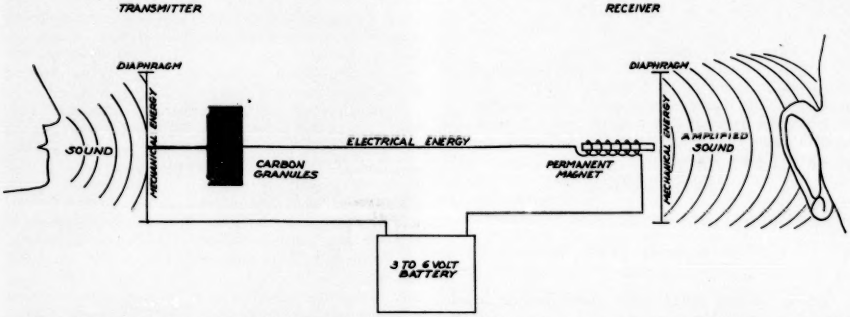


Fig. 1.—Original Bell type carbon hearing aid (schematic diagram of circuit, from Lectures on Hearing Aids and Audiometers, by Howard A. Carter). This consisted of a simple transmitter, battery and receiver. Its function was to amplify speech by the application of electrical energy. For fifty years this was the only hearing aid available for all types of deafness.

CONCLUSIONS

1. At present both tube and carbon aids have definite advantages and disadvantages. Both are being improved constantly.

2. Indications for each must be formulated from the experience of otologists, physicists and manufacturers, with the final decision made by the patient.

3. Tube aids give more brilliant hearing improvement in conduction loss when nerve function is good. In severe perceptive loss, results are often disappointing.

4. Purchase from a firm that manufactures both carbon and tube aids, for air as well as bone conduc-

3. Stevens and Davis define this as the area lying between the thresholds of hearing and feeling. The latter varies all the way from a tickle through an itch to what Kekesy describes as a painful burning similar to that produced by severely rubbing the skin but felt deep down inside the ear. Usually this is referred to as the threshold of pain.

tion, allows choice between the two and makes exchange of one for the other easier.

5. Since tube aids are much more complex instruments, the need for an impartial evaluating agency such as the Council on Physical Therapy of the American Medical Association, to set and maintain requirements for acceptance of standards of construction and performance as well as of sales ethics and advertising, is even more necessary with the advent of tube aids. Financial rating of the manufacturers is very important.

6. Although the lure of radio tubes is great, patients should not discard carbon for tube aids without careful investigation.

7. Tube aids are as yet more expensive to manufacture, buy, keep up and service.

8. Whether tube aids will supplant the carbon type of hearing aid or vice versa, or whether each will eventually occupy its own definite field, with the actual improvements that are being made in construction by manufacturers and in the prescription of hearing aids by otologists, good results are now obtained by the vast majority of patients properly fitted with a well made hearing aid.

9. Even better instruments and better hearing seem to be on the way.

25 East Washington Street.

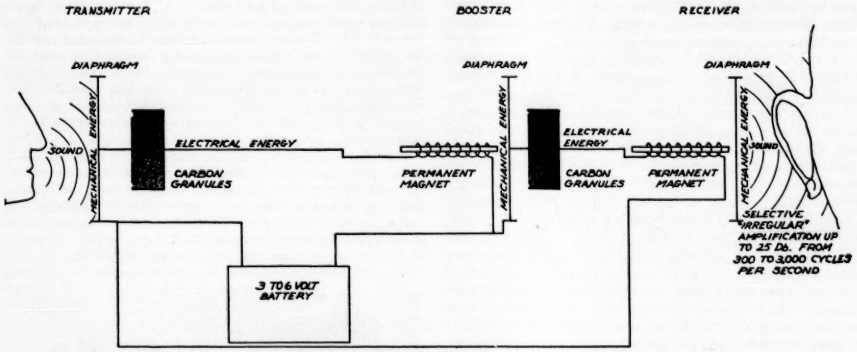


Fig. 2.—A modern carbon hearing aid (schematic diagram of circuit, from Lectures on Hearing Aids and Audiometers, by Howard A. Carter). This is a simple sturdy dependable instrument with a larger battery and an amplifier or booster that operates on low voltage (from 3 to 6 volts). It has much more amplification (going up to 25 or 30 decibels) than the original, with a frequency ranging from 300 to 3,000 cycles per second. Amplification is "distorted" but selective and capable of being peaked into one to three areas of hearing loss. Some extraneous noise is unavoidable. The only service required is occasional cleaning and replacement of carbon, all of which can be done by any service station. The aids adapt themselves equally well to both bone and air fittings. Batteries give ample warning of failure. Short circuits are not likely to burn. Expense of purchase and upkeep is less than for a tube aid.

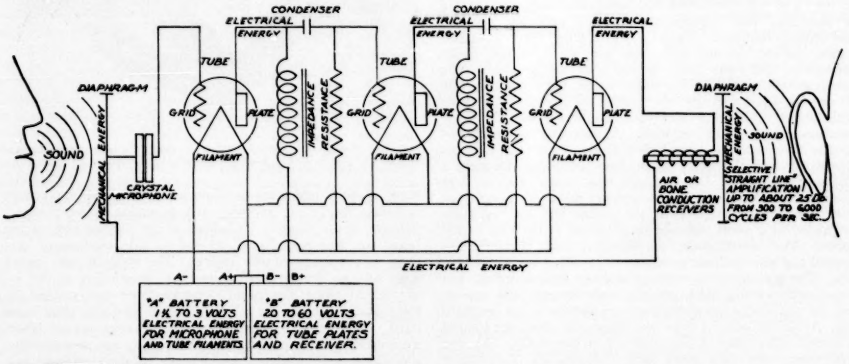


Fig. 3.—Tube hearing aid (schematic diagram of circuit, from Lectures on Hearing Aids and Audiometers, by Howard A. Carter). This is necessarily a complex and fragile instrument compared with the carbon type. It is free from carbon noise but has tube and battery noise. (Tube noise is a ringing sound from jars and quick movement, or a mushy sound if tube filament or grid wires are off. Rubbing the case by clothing or hand amplifies the rustling sound.) It gives uniform, undistorted amplification generally spoken of as "straight line." Its tubes (from two to four), choke, transformer, condensers, resisters, switches, jacks and soldered connections (from four to six for each tube) all make it so. The chokes and transformers have to be wound with such fine wire (half the diameter of the human hair) that they are extremely delicate and consequently sensitive to falls, strains and moisture. The high voltage (from 20 to 60 volts) current can burn if short circuited. Complete and sudden failure of performance without warning occurs when batteries or parts give out, the life of the latter being variable and unpredictable. It must be sent to the factory or a specified station for service. It is more expensive to buy as well as to keep up.

SOLITARY CECAL DIVERTICULITIS

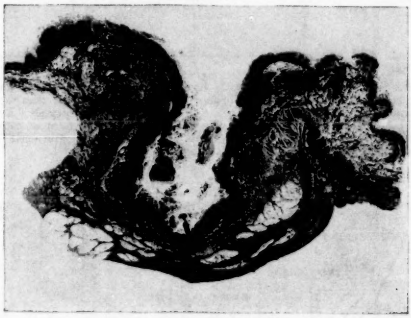
AUGUST JONAS JR., M.D.
BALTIMORE

The general surgeon is probably called on to operate in the right lower quadrant of the abdomen more frequently than in any other region and here preponderantly for inflammatory lesions of the vermiform appendix. It is my purpose in this paper to call attention to a condition closely resembling appendicitis, a condition which is seldom considered in the differential diagnosis and one which is scarcely mentioned in any of the standard textbooks of surgery. In discussing a series of 118 cases of diverticulitis of the colon, Judd and Pollock [1] made no mention of cecal diverticulitis simulating appendicitis. Solitary cecal diverticulitis should not be confused with multiple diverticulitis, which may involve the cecum and ascending colon—examples of this condition having occurred from time to time in the surgical service of Johns Hopkins Hospital. Instances of solitary cecal diverticulitis have been reported in the literature from time to time and during the past year three cases have been recognized at this hospital. These cases together with two others of less recent date, as well as fifteen cases taken from a review of the literature, form the factual data for this communication.

REPORT OF CASES

CASE 1.—An Italian housewife aged 50 was admitted April 27, 1934, complaining of pain in the right lower quadrant of the abdomen. Because of language difficulties an accurate history was not obtained. She had never been operated on. For about one month she had had fairly constant pain, always localized to the right lower quadrant and never associated with nausea or vomiting. Her appetite had remained good and she had had neither constipation nor urinary symptoms. Physical examination showed definite tenderness and slight muscle spasm throughout the right lower quadrant of the abdomen. The temperature was 99.2 F., the pulse rate 88, the respiratory rate 20 and the blood pressure 106 systolic, 66 diastolic. The urine was normal. The white blood cell count was 9,100. The Wassermann reaction was negative. A diagnosis of appendical abscess was made and immediate operation done (Dr. Eldridge Campbell) under nitrous oxide-ether anesthesia through a McBurney incision. The appendix was normal and lay free without any adhesions. An inflammatory mass was found lying just lateral and posterior to the cecum and had evidently originated in a small inflamed diverticulum at the base of the cecum. The diverticulum, containing a small fecalith, was excised and the resulting aperture closed with a purse-string of silk. The appendix was removed and the wound drained and closed with catgut. The patient's convalescence was smooth and she was discharged ambulatory and afebrile on the twentieth day. A barium sulfate enema done before her discharge showed a normal colon without any evidence of diverticula. She was well when seen two years later. Microscopic examination showed a normal appendix and an inflamed diverticulum consisting of mucosa, submucosa and edematous subperitoneal fibrous tissue. No muscularis was identified.

CASE 2.—An American housewife aged 28, admitted June 27, 1939, complained of abdominal pain. Her past history was essentially negative. A week before admission she had been seen in several of the outpatient departments because of obesity and infectious arthritis in the left ankle. At that time some tenderness and slight muscle spasm had been elicited over McBurney's point. In an attempt to find a focus of infection for her arthritis, roentgenograms of the upper gastrointestinal tract and of the gallbladder by the Graham-Cole test were done, but these yielded negative results. About eighteen hours before admission she began having dull pain throughout the entire lower part of the abdomen. She lost her appetite and became nauseated but did not vomit. During the succeeding hours these pains, which she described as sharp and aching but not cramplike, gradually localized in the right lower quadrant. The patient was obese and was in considerable distress although not acutely ill. There was diffuse muscle spasm and slight tenderness throughout the right lower quadrant of the abdomen with maximal tenderness at McBurney's point. Vaginal and rectal examinations showed slight tenderness high on the right side. The temperature was 99.6 F., the pulse rate 84, the respiratory rate 24 and the blood pressure 104 systolic, 72 diastolic. The hemoglobin content was 88 per cent and the white blood cell count 9,800. The urine was normal. The flocculation test gave negative results. A diagnosis of acute appendicitis was made and immediate operation done (A. J.) under avertin with amylene hydrate and nitrous oxide-ether anesthesia. A McBurney incision was made through the thick panniculus. There was no free fluid within the abdomen and the appendix was perfectly normal. Beneath the cecum a firm mass the size of a small hen's egg was readily palpable. It was delivered and found to be a large, acutely inflamed diverticulum lying between the two folds of the mesentery. Because of the size of the lesion and its proximity to the blood supply of the cecum, inversion or excision seemed inadvisable. Accordingly a right midrectus incision was made and the cecum, including the lesion, appendix and ascending colon, resected. Because of the disparity in caliber of the divided ends of the ileum and transverse colon, an end to side anastomosis was done with interrupted silk sutures. The abdomen was closed with silk, no drainage being used. A transfusion of 500 cc. of citrated blood was given. Convalescence was marked by abdominal distention for which duodenal drainage gave some relief. On the fourth day she commenced having normal bowel movements and thereafter her convalescence was smooth. She was discharged ambulatory and afebrile on the eighteenth day. When seen two months later she was in excellent health. Pathologic examination showed a cecal diverticulum measuring 4 by 4 by 25 cm. All layers of the intestine were present, although the muscularis was considerably thinned. The entire structure, especially at its tip, was acutely inflamed, and there was considerable inflammation in the surrounding fatty tissues, as shown in the accompanying illustration.



Section through the specimen taken in case 2; slightly reduced from a photomicrograph with a magnification of 3½ diameters.

CASE 3.—A Negro chauffeur aged 47, admitted July 10, 1939, complained of abdominal pain. His past history was essentially negative. Three days before admission he had commenced experiencing cramplike pains in the right lower quadrant of the abdomen. These had been associated with marked anorexia and had been severe enough to prevent his sleeping. His bowels had moved regularly until two days before admission, when he took a dose of solution of magnesium citrate which produced several loose stools but gave no relief from the pain. The

From the Department of Surgery, Johns Hopkins University School of Medicine and Hospital.

1. Judd, E. S., and Pollock, L. W.: Diverticulitis of the Colon, Ann. Surg. **80**: 425 (Sept.) 1924.

patient was muscular; he was uncomfortable but not acutely ill. The abdominal muscles showed no definite spasm, but deep palpation about 2 inches mediad to the right anterior superior iliac spine elicited constant tenderness. There was no rebound tenderness. The temperature was 99.8 F., pulse rate 78, respiratory rate 24 and blood pressure 130 systolic, 85 diastolic. The urine was normal. The flocculation test gave negative results. The hemoglobin content was 16 Gm. The white blood cell count was 8,100. A diagnosis of acute appendicitis was made and immediate operation done under avertin with amylene hydrate and nitrous oxide anesthesia through a McBurney incision. The peritoneal cavity contained a small amount of clear, slightly blood tinged fluid. The appendix was in a retroperitoneal position, mobilized, found to be normal and then removed. A small hard mass about the size of an olive was then located on the lateral aspect of the cecum about 2 inches above the appendical stump. The surrounding fat was markedly indurated and reddened. The overlying fat was incised and an acutely inflamed diverticulum about 1 cm. in diameter exposed. A part of it was gangrenous; no fecalith was felt. It was easily inverted through two purse-strings of silk and the abdominal wound closed without drainage. The convalescence was smooth except for a superficial wound infection from which Bacillus coli was cultured. He was discharged ambulatory and afebrile on July 26. A week later the wound was entirely healed. Since then the patient has been quite asymptomatic.

CASE 4.—A white woman aged 48, a housewife, admitted May 23, 1939, complained of pain in the right lower quadrant of the abdomen. At the age of 24 she had had several attacks of pain in the right lower quadrant of the abdomen associated with nausea and well localized tenderness. These attacks usually lasted two or three days, gradually subsiding. Two years later she had a similar attack and was admitted to the gynecologic service of this hospital, where an appendectomy was done. The appendix was described as "short and thick and relatively free from adhesions." The cecum was inspected and no abnormalities were noted. A pathologic diagnosis of "chronic appendicitis" was made. She had no further attacks and was quite well until the middle of March 1939, when she experienced severe cramp-like pain in the abdomen for five days. This finally subsided after she took a large dose of magnesium sulfate. Six days before admission she commenced having similar pain, this time in the right lower quadrant of the abdomen. Physical examination showed a well healed McBurney scar on the abdomen. Extending from the level of the upper end of the scar and descending into the pelvis on the right side was a firm, moderately tender mass of rounded contour. It seemed to be slightly larger than the examiner's fist and to lie within the abdominal cavity. Vaginal examination failed to demonstrate any connection between the mass and the pelvic genitalia. The temperature was 99 F., pulse rate 84, respiratory rate 20 and blood pressure 160 systolic, 100 diastolic. The hemoglobin content was 96 per cent. The white blood cell count was 8,250. The urine was normal. The flocculation test gave negative results. X-ray films of the abdomen, the Graham-Cole test, intravenous pyelograms and barium sulfate enema all gave negative results. A preoperative diagnosis of abdominal abscess of undetermined origin was made and operation carried out on June 2 (Dr. Edward Stafford) under nitrous oxide-ether anesthesia through a low right rectus incision. On the anterior surface of the cecum just at its junction with the ileum lay an inflammatory mass well walled off by omentum. The attachments of the omentum were divided and the whole mass removed from the cecum by sharp dissection. This revealed a small hole in the under side of the cecum at some distance from the usual site for the base of the appendix. The opening, which was perfectly flush with the cecal wall, was closed with two layers of catgut sutures. A drain was placed down to the cecum and the wound closed with catgut and stay sutures. The patient's convalescence was smooth and she was discharged ambulatory and afebrile on the fourteenth day. The wound was entirely healed one month after operation and the patient was quite well three months later. Microscopic examination of the tissue removed showed subacute and chronic inflammation.

In the foregoing case it seems highly probable that the inflammatory mass originated from a perforated diverticulum, because the appendix had been cleanly removed eleven years previously and because the point of perforation in the cecum lay some distance from the usual site of the appendical base and to one side of the longitudinal bands of the colon. Nevertheless, one cannot be certain of the etiology. Table 1 [2] summarizes the points of interest in fifteen cases of solitary cecal diverticulitis—the total gathered from a search of the literature.[3]

CASE 5.—A married woman aged 36, a garment worker, admitted May 27, 1937, complained of abdominal pain of five days' duration. Her general health in the past had been good. Following the onset of generalized abdominal pain she had taken a saline cathartic. This had produced several fluid stools and the pain had localized in the right iliac fossa. At no time had she vomited. The temperature was 100.8 F. (rectal), the pulse rate 100, the respiratory rate 24 and the blood pressure 130 systolic, 70 diastolic. The urine was normal. The white blood cell count was 19,000. Low in the right lower quadrant was an exquisitely tender mass about the size of a hen's egg. The entire abdomen was tender, and rebound tenderness was referred to the right lower quadrant. Vaginal examination gave negative results. A diagnosis of appendical abscess was made and immediate operation done (Dr. Paul Kunkel) under nitrous oxide-ether anesthesia. The cecum presented through a McBurney incision and along its lateral wall and closely adherent to it lay a firm mass resembling an acutely inflamed appendix. "It was exactly like an inflamed appendix curled upon itself save that it was not as long as an appendix and had a much broader base." The mass was resected and its stump inverted through a purse-string suture. The rest of the cecum was then delivered and a normal appendix found on its medial side. This too was amputated and its stump inverted through a purse-string. A normal gallbladder containing a solitary stone was palpated and left undisturbed. The wound was closed with catgut, no drainage being used. It healed nicely and the patient was discharged ambulatory and afebrile on the seventh day. She has had no recurrence of symptoms, but when last seen, thirty months after operation, complained of menorrhagia, probably due to a chronic cervicitis. Unfortunately there was no pathologic study made of either the diverticulum or the appendix.

COMMENT

In the group of cases collected from the literature and tabulated herewith, the operative and pathologic observations are of some interest. French's [4] first patient had occasional attacks of abdominal pain for one year and had lost some weight but experienced no acute symptoms. The only finding at operation was a solitary cecal diverticulum containing a hard fecalith but showing no evidence of active inflammation. Dislodgment of the fecalith and inversion of the diverticulum, however, resulted in complete cure. Such a case might more properly be classified as one of diverticulosis. Thomsen's [5] third patient gave a long history of pain in the right lower quadrant and had no acute symptom, and histologic examination of the excised diverticulum showed several small tuberculous ulcers at its junction

2. Because of lack of space table 1 has been omitted in THE JOURNAL; the complete article appears in the author's reprints.

3. Jackson, W. R.: Diverticulitis of the Cecum, New York M. J. **106:** 838 (Nov. 3) 1917. Moschcowitz, A. V.: Acute Gangrenous Perforated Diverticulitis of the Cecum, Ann. Surg. **67:** 624, 1918. Cooke, A. B.: When Appendicitis Is Not Appendicitis: A Case of Diverticulitis of the Cecum, J. A. M. A. **78:** 578 (Feb. 25) 1922. Pereira, Harold: Diverticulitis of the Cecum, Brit. M. J. **1:** 279 (Feb. 12) 1927. Leonardo, R. A.: Primary Solitary Diverticulitis of Cecum, Ann. Surg. **91:** 540 (April) 1930. Stetten, De Witt: Ileocecal Resection for Acute Diverticulitis of Solitary Diverticulum of Ascending Colon, Ann. Surg. **104:** 478 (Sept.) 1936. Visconti, J. A.: Diverticulitis of Ascending Colon Simulating Acute Appendicitis, Am. J. Surg. **32:** 376 (May) 1936.

4. French, R. W.: Diverticulitis of the Cecum, with Report of Three Cases, Boston M. & S. J. **189:** 307 (Aug. 30) 1923.

5. Thomsen, H.: Solitaere coecaldivertikler, Hospitalstid. **78:** 45 (Jan. 8) 1935.

with the cecum. He gave no information as to the condition of the rest of the intestinal tract nor any report as to the end result. In two instances, the case of Potier [6] and that of Obenour,[7] acute inflammation of the appendix and of a diverticulum was found. In both cases the diverticulum opened into the cecum at some distance from the appendix, but sufficient details of existing relationships are not available for one to be certain at which point the process was primary. In Shier's [8] case the diverticulum was situated in the ascending colon, yet the whole picture is so typical that it is included here.

It is customary to classify diverticula in two groups: (1) true, when all the normal layers of the intestine—mucosa, submucosa, muscularis, and serosa—are present, and (2) false, when the muscularis is absent. Such a classification is based on the assumption that false diverticula represent outpouchings through weak points in the muscularis. Of the cases here reviewed, sufficiently detailed pathologic descriptions are provided in nine, six of them being classified as true diverticula and three of them as false. This distinction should not be considered as arbitrary, for unless serial sections are made through the entire specimen a thinned-out layer of muscularis may be missed entirely. Conversely, in a false diverticulum the section may be eccentric, passing through a layer of muscularis, and an erroneous diagnosis may be made.

TABLE 2.—*Age Distribution*

Age in Years	Number of Cases
0 to 9	0
10 to 19	1
20 to 29	4
30 to 39	2
40 to 49	3
50 to 59	7
60 to 69	2

Inflammation of a solitary cecal diverticulum may apparently occur at any age, the ages in the cases here reviewed ranging from 10 to 64 years, seven of the patients, or 36.8 per cent, being under the age of 40. This is in sharp contradistinction to the age incidence of multiple diverticulitis, for Brown [9] at the Mayo Clinic found that of 191 cases of colonic diverticulitis treated surgically only 5.2 per cent occurred under 40 years of age—a proportion with which other reports are in substantial agreement. Since appendicitis too occurs at any age, it would seem that the age factor is no aid in the diagnosis of solitary cecal diverticulitis. Moreover it would appear that the condition is seldom associated with the multiple or widespread form of the disease. Of my five patients, two had completely negative barium studies of the colon, the third underwent a negative exploration of the rest of the colon, while the fourth and fifth have not returned for a follow-up barium enema study. Of the cases summarized from the literature, two more were shown by complete exploration and barium enema to have the process confined to the cecum.

Most of the diverticula contained one or more fecaliths; they were present in at least thirteen of the nineteen cases, or 68.4 per cent, and probably play a considerable role in the etiology of the inflammation. While it is rare for perforation of an inflamed cecal diverticulum to result in peritonitis, it is common for perforation to result in abscess formation, as it did in eight of the aforementioned cases. Widespread peritonitis is a rare sequela, perhaps because of preexisting adhesions to the omentum and to the parietes. The resulting abscesses are usually thick walled and fairly discrete and not infrequently lie adjacent to the mesentery or even between its two leaves. The abscesses are so intimately attached to the cecum, so tumefied and so frequently associated with enlarged mesenteric lymph nodes that it is not uncommon for the surgeon to mistake the condition for malignant tumor of the cecum. Occasionally the true nature of the condition is not made clear until the specimen is opened or sectioned. Others of the resulting abscesses are so completely walled off that it is possible to dissect them quite free from the cecum with a minimum of contamination.

One might expect x-ray studies by means of barium sulfate enemas to be of value in a differential diagnosis involving the condition. Not only is a barium sulfate enema contraindicated in the acute stage of the disease because of possible further dissemmination of infection but it is frequently ineffectual in demonstrating the presence of a diverticulum which is plugged by inspissated feces or filled by an actual fecalith. It is a common observation among roentgenologists that of all the diverticula present in the multiple form of the disease only a small proportion are usually demonstrated by a single barium sulfate enema.

As for the proper operative procedure to employ, one should use the simplest compatible with eradication of the condition. A small uncomplicated diverticulum may be inverted through a purse-string. A larger diverticulum may require excision before inversion. Large inflamed diverticula lying close to the ileocecal valve or between the leaves of the mesentery so as to jeopardize the cecal blood supply require extensive resection. For lesions in this region the practice in this clinic is to resect a few inches of terminal ileum, cecum and ascending colon, completing the procedure, if possible, by an end to end anastomosis between ileum and transverse colon at a point at which the colon has a nearly complete peritoneal coat. Discrete abscesses and inflammatory masses may be dissected free when possible, although such a procedure risks spreading of infection. Adherent abscesses and those involving the parietes are better drained than removed.

In the entire series not a single fecal fistula has resulted. Since in a considerable proportion of cases the process is limited to a single diverticulum, the condition should be treated with the end in view of permanently curing the condition rather than palliating it, as of necessity is the case in multiple diverticulitis. Additional evidence of the solitary nature of the condition is afforded by the fact that patients properly treated have remained perfectly well without any gastrointestinal symptoms for long periods.

One may agree heartily with Stetten and Abeloff: [10] "The condition . . . is rather prevalent and should always be borne in mind in questions of differential

6. Potier, F.: Diverticulité et appendicité, Bull. et mém. Soc. anat. de Paris **37**: 29, 1912.

7. Obenour, S. W.: Gangrenous Diverticulum Associated with Suppurative Appendicitis, Ohio State M. J. **34**: 175 (Feb.) 1938.

8. Shier, R. V. B.: Acute Diverticulitis of the Ascending Colon, Canad. M. A. J. **39**: 264 (Sept.) 1938.

9. Brown, P. W.: The Treatment and Prognosis of Diverticulitis of the Colon, Am. J. Surg. **46**: 162 (Oct.) 1939.

10. Stetten, De Witt, and Abeloff, A. J.: Observations on the Clinical Picture and Therapy of Diverticulitis of the Colon, J. Mt. Sinai Hosp. **4**: 781 (March-April) 1938.

diagnosis of an acute abdomen. It should always be looked for at operation if other findings do not satisfactorily explain the clinical picture, and the surgeon should always be prepared to deal appropriately with the condition."

SUMMARY

1. Solitary cecal diverticulitis is an unusual condition which closely simulates appendicitis clinically.

2. It should always be considered in the differential diagnosis of pain in the lower part of the abdomen and should be searched for at operation if the other conditions do not explain the clinical picture.

3. It may occur at any age and is prone to progress to perforation and abscess formation, but if properly treated it should, in contradistinction to multiple diverticulitis, result in a permanent cure.

The Johns Hopkins Hospital.

SYPHILIS OF THE BONES IN INFANCY

SOME POSSIBLE ERRORS IN THE ROENTGEN DIAGNOSIS

WILLIAM A. EVANS JR., M.D.

DETROIT

The recent stimulation of interest in the detection and treatment of syphilis warrants comment on some of the special problems involved. One of these is the diagnosis of congenital syphilis. Antepartum examinations and the treatment of syphilitic women during pregnancy have prevented many cases of syphilis in the offspring but have made the diagnosis of congenital syphilis even more difficult. In most cases the diagnosis is either finally confirmed or excluded by the serologic studies or by the roentgen examination of the long bones. An early decision is important, for prompt treatment is necessary to prevent the occurrence of permanently damaging lesions; on the other hand, unnecessary treatment is particularly troublesome and harmful to the health and even life of a child.

A positive serologic reaction alone is of doubtful validity, for it is known that the property of producing a positive test may be transferred from the maternal blood to the fetal blood without the fetus being syphilitic (Filde's law). Christie [1] has recently confirmed this and has shown that some help is offered by the quantitative measurement of the complement fixing antibodies. If these are present in a nonsyphilitic child at birth their concentration in the serum will rapidly diminish and disappear in about three weeks. If the child is syphilitic there will be no decrease or only a temporary decrease in the titer, and a rise in the titer in a period of from four to six weeks will indicate a definite syphilitic infection. A negative serologic test in the newborn child is also inconclusive, for many children who eventually show evidence of syphilis have a negative serologic test at birth. This circumstance was observed in 37 per cent of the syphilitic children studied by Cooke and Jeans [2] and in 33 per cent by Ingraham.[3] Ingraham recommends the dark field examination of scrapings of the umbilical vein for making an early diagnosis in doubtful cases.

The roentgen examination of the long bones attained importance particularly through the studies of Pendergrass and Bromer,[4] Vogt [5] and McLean,[6] and there is no doubt that characteristic osseous lesions are found in a very high percentage of cases of fully developed syphilis. The diagnosis in the less obvious cases is more difficult, however, and both positive and negative errors may be made. At the Children's Hospital of Michigan, routine x-ray studies of the long bones of premature infants and of infants in whom syphilis is suspected have been carried out for a number of years, and some of these problems have come to our attention.

FALSELY NEGATIVE ROENTGEN EXAMINATION

A child may show no osseous lesions or other evidence of syphilis at birth and after several weeks or months definite manifestations of congenital syphilis may develop. In the material studied by Ingraham [7] this was a common circumstance, being observed in one half of the cases. His observations indicated that from four to six weeks is required after the infection of the fetus for osseous lesions to appear. If this occurs early, i. e. in the fifth month of pregnancy, the lesions will be fully developed at birth. If, on the other hand, the infection does not occur until shortly before birth, osseous lesions will not become manifest until the second or third month of life. We have recently observed three cases of this type:

CASE 1.—B. C., an illegitimate white girl, was born three weeks prematurely of a syphilitic primiparous woman who had received intravenous and intramuscular antisyphilitic treatment for two months prior to delivery. She was admitted to the Children's Hospital at 1 month of age because of twitchings of the extremities. The physical examination was negative, but there was a strongly positive blood Kahn test and the spinal fluid contained 300 white cells per cubic millimeter, although

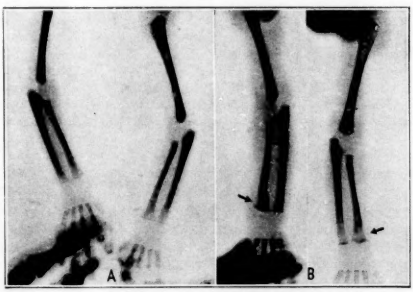


Fig. 1 (case 3).—The first examination (*A*), made at 7 days of age, revealed no characteristic syphilitic lesions. The second study (*B*), two months later, showed a destructive syphilitic osteochondritis at the lower ends of both radii.

From the Department of Roentgenology of the Children's Hospital of Michigan.

1. Christie, A. U.: Diagnosis of Syphilis in Newborn Infants: Use of Quantitative Wassermann Tests, Am. J. Dis. Child. **55**: 979 (May) 1938.

2. Cooke and Jeans, cited by Stokes, J. H.: Modern Clinical Syphilology, Philadelphia, W. B. Saunders Company, 1927, p. 1013.

3. Ingraham, N. R.: The Diagnosis of Infantile Congenital Syphilis During the Period of Doubt, Am. J. Syph. & Neurol. **19**: 547 (Oct.) 1935.

4. Pendergrass, E. P., and Bromer, R. S.: Congenital Bone Syphilis, Am. J. Roentgenol. **22**: 1 (July) 1929.

5. Vogt, E. C.: The Value of the Roentgenography in the Diagnosis of Congenital Syphilis, Am. J. Roentgenol. **26**: 96 (July) 1931.

6. McLean, Stafford: Correlation of Roentgenographic and Pathologic Aspects of Congenital Osseous Syphilis with Particular Reference to First Months of Life, Am. J. Dis. Child. **41**: 363 (Feb.) 1931; Correlation of the Roentgenologic Picture with the Gross and Microscopic Examination of Pathologic Material in Congenital Osseous Syphilis, ibid. **41**: 607 (March) 1931.

7. Ingraham, N. R., Jr.: The Lag Phase in Early Congenital Osseous Syphilis, Am. J. M. Sc. **191**: 819 (June) 1936.

the spinal fluid Kahn test was negative. The roentgen study of the long bones revealed no abnormality. No definite diagnosis was made at this time; but on the second admission one month later, for a recurrence of symptoms, the liver and spleen were found enlarged, both blood and spinal fluid Kahn tests were positive, and well developed syphilitic lesions were observed in the long bones by x-rays. The child improved under specific therapy and there was regression of the osseous lesions.

CASE 2.—W. G. was a 7 month premature Negro child born of a 23 year old woman suspected of having syphilis but untreated. At the time of birth the cord blood Wassermann test was positive, and for this reason four injections of bismarsen were administered. The infant was admitted to the Children's Hospital at the age of 33 days with some edema of the legs. Over a period of three months the infant's blood Kline test was negative four times and positive twice and one Kahn test was negative. The maternal blood Kline and Kahn tests were both positive twice and negative twice. Clinically the child presented a feeding problem, with dietary anemia and edema. The first roentgen study of the long bones was negative, except for some submetaphysial demineralization which we regarded as the result of the nutritional disturbance. Questionable syphilitic changes were seen in the long bones at the study six weeks later, but a positive diagnosis could not be made until more definite changes were observed after another four weeks, at about 3 months of age.

CASE 3.—M. K. was born prematurely at 7 months of an apparently healthy Negro woman. The hospital admission occurred at 17 days of age because of bronchopneumonia. No changes were observed in the bones at that time (fig. 1), and two blood Kline tests were negative. Both parents, however, exhibited positive Kline reactions of the blood. Two months later a second roentgen study of the bones revealed typical syphilitic changes, and the infant died two days later.

These three cases illustrate some of the difficulties in making an early diagnosis of congenital syphilis

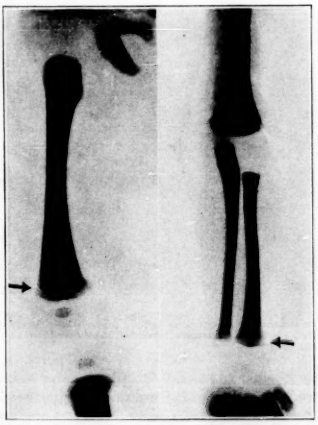


Fig. 2 (case 4).—Well developed submetaphysial rarefaction with increased density of the metaphysial line in an infant of 1 week with hemolytic icterus. No evidence of syphilis had appeared in an observation period of five months.

when the evidence is conflicting or inconclusive. Often the observations must be continued through a period of doubt lasting two or three months before a positive diagnosis can be made, and then it may be too late for effective treatment.

FALSELY POSITIVE ROENTGEN EXAMINATION

The hazards of making a false diagnosis of syphilis, illustrated by the following group of cases, arise from an improper interpretation of changes occurring in the metaphysial areas and of periosteal shadows and defects in the diaphysis.

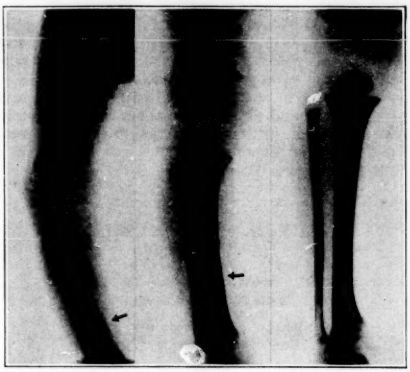


Fig. 3 (case 5).—Periosteal proliferation was observed at the lower medial aspect of the right tibia of a 1 week old infant examined because of failure to use the right leg and evidence of pain. No evidence of syphilis appeared and the periosteal reaction subsided as shown by the last study, made at 7 months of age. This is probably an instance of subperiosteal fracture sustained at breech delivery.

Bands of rarefaction or condensation are frequently seen at the ends of the diaphyses, especially in premature infants and those presenting nutritional disturbances. These changes cannot be regarded as specific. Although some observers [8] have offered such evidence as indicative of syphilis, their nonspecific character has been recently emphasized by Christie [9] and Caffey.[10]

CASE 4.—J. D. was admitted to the hospital at the age of 1 week with anemia and jaundice and a feeding problem. The liver and spleen were enlarged and the red blood cell count was 3,500,000. X-ray studies of the long bones (fig. 2) revealed a striking band of rarefaction in the submetaphysial areas. The Kahn test was negative. On a second admission at 5 months of age for a respiratory infection the blood and spinal fluid Kline tests were negative and there were no clinical signs of syphilis.

Periosteal shadows vary from the very fine white line parallel to the shafts of the long bones, most commonly the femurs to a very heavy onion-like cloaking of the bone which may double the diameter of the shaft. In the newborn and young infants such a finding has in the past been considered [11] pathognomonic of syphilis, but this is certainly not true. Causes of these periosteal shadows are found not only in syphilis but also in subperiosteal fractures occurring at delivery,[12] in rickets,

8. Parmelee, A. H., and Halpern, L. J.: Diagnosis of Congenital Syphilis, J. A. M. A. **105**: 563 (Aug. 24) 1935.

9. Christie, A. U.: The Value of Roentgenographic Examination in the Diagnosis of Syphilis in Newborn Infants, J. Pediat. **15**: 230 (Aug.) 1939.

10. Caffey, John: Syphilis of the Skeleton in Early Infancy, Am. J. Roentgenol. **42**: 637 (Nov.) 1939.

11. Chiari, Ottokar: Ueber periostale Reaktionen bei nicht luetischen Kindern im ersten Trimenon, Acta paediat. **22**: 436, 1938.

12. Snedecor, S. T.; Knapp, R. E., and Wilson, H. B.: Traumatic Ossifying Periostitis of Newborn, Surg., Gynec. & Obst. **61**: 385 (Sept.) 1935.

in tuberculosis and other forms of osteomyelitis [10] and in a considerable group of cases in which the cause is obscure. In the latter group may be instances of hypertrophic pulmonary osteo-arthropathy associated with chronic pulmonary or cardiac disease as suggested by Meier.[13] It also seems likely that irregularities in periosteal new bone formation causing a laminated appearance of the cortex may occur as the result of nonspecific growth disturbances in the same manner as the irregularities of enchondral ossification which lead to transverse striations at the ends of the diaphyses.

CASE 5.—D. F., a private patient of Dr. J. J. Pollack, was born of a primiparous woman by a breech delivery. At 1 week of age there was an apparent paralysis of the right leg. Some redness and swelling were noted over the tibia, but there were no signs of a generalized infection or of any abnormality within the chest. Blood Kahn tests were negative on both parents and the child. X-ray examinations (fig. 3) revealed a definite periosteal shadow at the lower end of the right tibia. Further studies over a period of seven months showed an uneventful growth of the child, and there was gradual disappearance of the periosteal shadow. Although no fracture line was demonstrable, we believe this to be an example of a subperiosteal fracture sustained at birth and manifested by pain and refusal to use the leg and by the callus which appeared at the fracture site.

Rickets is most often discovered in the last half of the first year of life and is recognizable by very characteristic changes at the ends of the diaphyses of the long bones. In addition to the disturbance in calcification of the metaphysial areas, however, there is a failure of calcification of new bone laid down by the periosteum, and this leads to an irregularity in the cortex of the shaft and the appearance of periosteal separation, or "cloaking," which closely resembles an inflammatory periostitis. True rickets is practically unknown in the newborn and is uncommon in the second or third month of life. At this age the roentgen manifestations are often atypical and in our experience may be confined to the shafts of the long bones with very inconspicuous changes in the metaphysial areas. In such instances a diagnosis of syphilitic periostitis may be entertained. McLean [6] has emphasized that rachitic periosteal cloaking may closely simulate the periostitis of syphilis and reports an instance in a 3 week old Negro child in which the diagnosis was made at autopsy.

Fig. 4 (case 7).—A Negro child born of syphilitic parents was examined at 2 months of age as a syphilitic suspect, although serologic tests were negative. Periosteal shadows were noted about both femoral and tibial shafts. No other signs of syphilis appeared, and the study at 1 year showed typical changes of rickets. The periosteal shadows observed at the first examination were probably rachitic in nature.

CASE 6.—R. Z., one of twins born Jan. 31, 1939, was admitted to the Children's Hospital May 5 with a skin rash, fever

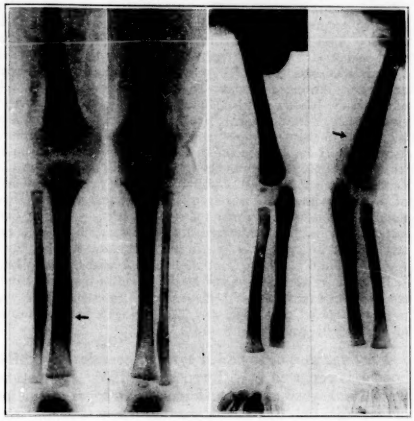


Fig. 5 (case 8).—A 1 year old child whose mother was suspected of having syphilis. The study showed widespread lesions involving the skull, mandible, small bones of the hands and feet, and periosteal proliferation about the long bones. A diagnosis of syphilis could not be established, and a positive tuberculin test, the clinical behavior of the lesions and biopsy indicated the tuberculous character of the process.

and jaundice. There was progressive bronchopneumonia, and death occurred May 20. Serologic tests on the patient and both parents were negative for syphilis. X-ray studies of the long bones revealed a striking degree of widespread periosteal reaction most marked in the ribs, femurs and tibias. The epiphyses were not yet demonstrable, and the only change in the metaphyses was a slight lipping at the corners. Postmortem examination showed bronchoneumonia, hepatitis and rickets, the last mentioned diagnosis being confirmed by microscopic study. The patient's twin brother, who was hospitalized at the same time, exhibited similar bone changes and made a satisfactory recovery.

CASE 7.—M. E., a Negro child, was born June 7, 1938. Both parents had had antisyphilitic therapy and the mother was treated during the pregnancy. A diagnosis of syphilis had been made on a sister 1 year old and she was under treatment. The patient had been breast fed but had received no cod liver oil. No physical abnormalities were noted, but because of the family history a roentgen study was made of the long bones Aug. 9, 1938 (fig. 4), which showed periosteal shadows. The Kline and Kahn serologic tests were negative and the patient was not treated for syphilis. The child was again seen June 21, 1939, and typical x-ray evidence of advanced rickets was obtained. In view of the florid rickets and the failure of syphilis to develop, we have concluded that the periosteal shadows observed at 2 months of age were in all probability rachitic in nature.

Inflammatory lesions other than syphilis which may involve the bones in infancy must also be given consideration. In our experience osteomyelitis is rare at this age, but Caffey [10] has reported cases of gonococcic and staphylococcic osteomyelitis with accompanying periostitis in infancy. Tuberculous involvement of shafts of the long bones is rarely seen, especially in

13. Meier, A.: Periostitis hyperplastica bei einem 3 Monate alten Frühgeborenen, Arch. f. Kinderh. **109**: 223, 1936.

infancy, but we have recently encountered one such case which offered a problem in differential diagnosis:

CASE 8.—J. W. was an illegitimate white child born by normal full term delivery. The 17 year old mother was said to have acquired and been cured of syphilis at 10 years of age. At the age of 10 months the patient was observed to have an enlargement of the left foot and left middle finger. On the admission to the outpatient clinic two months later x-ray studies revealed extensive osseous and periosteal lesions (fig. 5). In spite of repeated negative Kahn reactions in both mother and child and a strongly positive tuberculin test, the diagnosis of syphilis was entertained and specific treatment carried out with acetarsone for eight weeks. This was without demonstrable effect on the lesions, and hospitalization was advised for further study. It was learned that there had been cervical adenitis at the age of 6 months following pertussis with drainage from a fistulous tract for four months. The child appeared well nourished and happy. There was only slight anemia (hemoglobin 10.8 Gm. per hundred cubic centimeters), and during the hospital stay of five weeks there was rarely a significant temperature elevation. Attempts to obtain material by aspiration of the left first metatarsophalangeal joint were not successful. Further x-ray studies revealed cystlike lesions in the skull and mandible; there was no definite involvement of the lungs or mediastinum. Dec. 1, 1939, biopsy was carried out on the lesion in the right hand; microscopic examination of the caseous material which was removed showed a cellular structure having every appearance of tuberculous granulation tissue.

The first case of so-called cystic tuberculosis in childhood was reported by Schwentker in 1931. His patient was also 1 year of age and gave a stronger suspicion of syphilis but did not show the expected improvement under antisyphilitic treatment. This case and one reported by Vastine and Bacon [14] are very similar to ours. The lesions are indolent in character, are usually discovered accidentally and produce little local or systemic reaction. Only eleven cases of cystic tuberculosis of the bones in children were collected by Law and Perham [15] in 1938, and five of the patients were under 2 years of age, which testifies to the rarity of this condition.

CONCLUSIONS

1. The diagnosis of congenital syphilis has become more difficult and the manifestations of the disease are more obscure since antepartum examinations and the treatment of syphilis during pregnancy have become common.

2. Osseous lesions may not appear in a syphilitic infant until several weeks after birth, and the early x-ray studies may therefore be negative.

3. Striations and bands of rarefaction at the ends of the diaphyses and periosteal shadows or a laminated appearance of the cortex may be the result of a nonspecific disturbance of nutrition and growth and cannot, without other evidence, be regarded as indicative of syphilis.

4. In young infants rickets may be manifest by prominent periosteal shadows with minimal changes in the metaphysial areas. Other causes of periosteal shadows are subperiosteal fracture, cardiopulmonary osteo-arthropathy and a large group of cases in which the cause is obscure.

5. Tuberculosis and other infections may also produce osteal and periosteal lesions simulating syphilis in infancy.

10 Peterboro at Woodward.

14. Vastine, J. H., and Bacon, E. P.: Osteitis Tuberculosa Multiplex Cystica, Radiology **24**: 22 (Jan.) 1935.

15. Law, J. L., and Perham, W. S.: Multiple Cystic Tuberculosis of the Bones in Children, Am. J. Dis. Child. **56**: 831 (Oct.) 1938.

THE EFFECT OF HORMONES ON THE UNDESCENDED TESTIS

AN EXPERIMENTAL AND CLINICAL STUDY

J. S. EISENSTAEDT, M.D.
MAX APPEL, M.D.
AND
MAX FRAENKEL, M.D.
CHICAGO

The subject of undescended testis has been of great interest to one of us (J. S. E.) for over twenty years. In previous publications we have reported our results of operative treatment. Our point of view has changed somewhat and has been broadened by the work of other surgeons in this field and by our own increased experience. In this communication we are concerned chiefly with the newer methods of treatment now in vogue—the attempt to bring undescended testes into their proper position in the scrotum by the use of hormones. Those in which we are interested are the gonadotropic hormones derived from the anterior lobe of the pituitary gland and similarly acting water-soluble substances derived from the urine of pregnant women.

The literature during the past five or six years has been replete with reports of brilliant results in this mode of therapy. Some of the reports are so enthusiastic as to astound one. Here and there appear scattered reports of doubters and the expressed opinion that these substances may be of little or no value in the treatment of instances of true undescended testis and, in fact, may be actually harmful in certain instances when given in larger doses.

Those who have written of the high percentage of successful results do not seem to have been critical of the actual anatomic status of the abnormally situated testis. They apparently have failed to differentiate between the various positions which a retractile testis may occupy from testes in the true undescended positions and from those in ectopic positions.

The recent work of Denis Browne [1] seems to offer a basis of classification which, while not perfect, clarifies the situation considerably and corresponds with our clinical and anatomic conceptions of the problem. Browne divides the positions of the testes into three large categories, under each of which are several subheads: first, the normal positions, in which the testis invariably will descend spontaneously to the bottom of the scrotum by the time its growth is complete; second, the undescended positions in which the testis has been arrested in its line of travel from the region of the kidney to the scrotum, at some point from which there will be no spontaneous descent; third, the ectopic positions in which there is a turning aside from the direct line of descent below the external inguinal ring. In general we are in agreement with this classification but feel that a more descriptive term should be used to describe the so-called normal positions, because at least at the time the boys come for medical or surgical care the testis does not occupy its proper position, even if it may do so later without treatment.

From the Urological, Pathological and Metabolic departments of Michael Reese Hospital.

Read before the North Central Branch of the American Urological Association at Indianapolis, Sept. 26, 1939.

Dr. Otto Saphir and Dr. Samuel Soskin gave many helpful suggestions and offered the facilities of their laboratories in order that this work might be done.

1. Browne, Denis: Brit. M. J. **2**: 168 (July 23) 1938.

Our interest in the effect of hormones on the undescended testis was first aroused when we operated on a series of thirteen patients who had failed to respond to injections of anterior pituitary-like substance given by their physicians. We had previously operated on 177 patients who had not received hormone therapy and for that reason feel more or less conversant with the usual manifestations in this condition. In all instances the testes of patients who had received the larger dosages of hormone presented a very peculiar appearance and had a markedly reduced consistency. The dividing line between the smaller and the larger dosages for our purpose is approximately 6,000 rat units total dosage. In those patients receiving less than a total of 4,000 rat units the testis at operation did not appear unlike the many undescended testes on which we had operated in patients who had not received endocrine therapy. However, the adhesions present were more numerous and firmer than those in patients who had not received this type of treatment. In those who had received 6,000 rat units and more the testes invariably were smaller than in untreated patients or in patients who had received the smaller dosages. A comparison

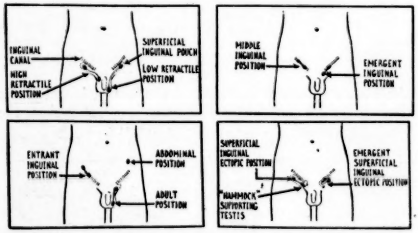


Fig. 1.—Diagram used for recording the position of the testes. It shows by conventionalized design the inguinal canal and the superficial inguinal pouch. The position of the testicle is charted by a black oval at each end of its range of movement, connected by a black line. Taken from Browne's article in the Lancet.

seemingly could be made between the amount of hormone given and the period over which it had been used and the diminution in the size of the testis. In one instance observed at our hospital the testis appeared merely as a slight nodule, hardly wider than the spermatic cord. This patient was operated on by Dr. M. L. Parker, and we have his permission to report the case. The surface of all testes which had been subjected to the larger dosage of hormone invariably presented a peculiarly mottled appearance, and they were all definitely reduced in consistency. We have verbal confirmation of identical observations made by Drs. Rolnick, Lieberthal and W. J. Baker. The appearance of these testes was so striking that we concluded that the injections of hormones might have produced these changes, and this was the reason for beginning our experimental work about eighteen months ago. In the meantime there have appeared one or two papers on this subject which present results somewhat similar to our own.

It is interesting to learn the fate of the abnormally situated testis when left untreated before and after puberty. Johnson's [2] recent paper is enlightening on this question. He observed the spontaneous descent of over 50 per cent of abnormally situated testes in a group of boys. The largest number of cases of spontaneous descent occurred at the age of 12 years, but in many instances the testes descended spontaneously up to and through the age of 17 years. Drake [3] insists that in the great majority of cases of cryptorchidism the gonads

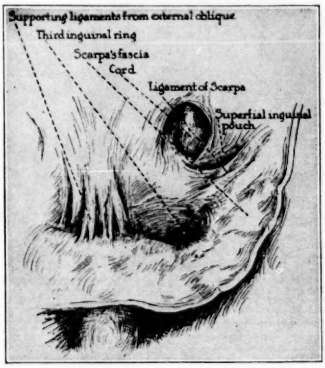


Fig. 2.—The superficial inguinal pouch is well shown in this dissection; it is between Scarpa's triangle or the deep layer of the abdominal fascia and the external oblique muscle; it is filled with very lax areolar tissue and is about the size and shape of the scrotum. From McGregor, A. L.: Surg., Gynec. & Obst. **49**: 292 (Sept.) 1929.

will reach the scrotum at or shortly after puberty. McCahey [4] found that in testes which were fixed in their abnormal position he was not successful in bringing about complete descent into the scrotum with endocrine therapy. "The maximum effect obtained in these cases was to have the testes descend to the lowest point to which previously it had been possible to move

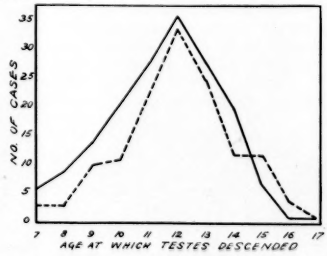


Fig. 3.—These curves are plotted from the results found by W. W. Johnson in his observations of 31,609 boys examined. Of these, 246 had bilateral nondescent, making 492 testes in malposition, and 298 boys with unilateral nondescent, a total of 790 testes in abnormal positions. Of these, 500 descended spontaneously. Note that the curves are quite parallel for bilateral and unilateral malposition. Solid line, bilateral descent; broken line, unilateral descent.

them, and sometimes retraction later occurred." Thompson and Heckel [5] in their most recent publication say

2. Johnson, W. W.: Cryptorchidism, J. A. M. A. **113**: 25-27 (July 1) 1939.

3. Drake, C. B.: Spontaneous Late Descent of Testis, J. A. M. A. **102**: 759-761 (March 10) 1934.

4. McCahey, J. F.: Gonadotropic Hormone Therapy in Cryptorchidism and Disturbances of Spermatogenesis, Pennsylvania M. J. **41**: 359-363 (Feb.) 1938.

5. Thompson, W. O., and Heckel, N. J.: Undescended Testes: Present Status of Glandular Treatment, J. A. M. A. **112**: 397-403 (Feb. 4) 1939.

"The effect of the anterior pituitary-like principle from the urine of pregnant women in the treatment of undescended testes appears to be exaggerated. It follows that in the majority of true undescended testes operative procedure is still necessary because of mechanical factors which prevent descent. It is possible that this material causes descent only of those testes which will descend without treatment about the time of puberty."

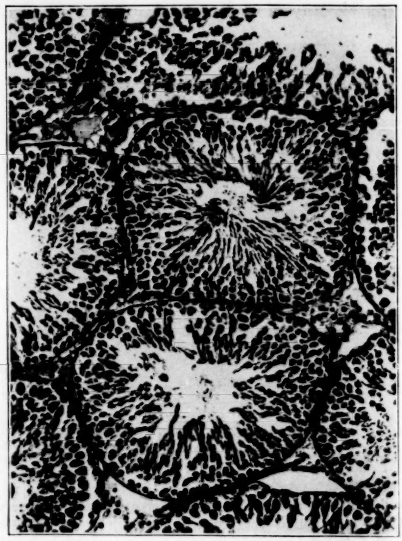


Fig. 4.—Section of normally situated testes from a treated animal. Note the active spermatogenesis in all the tubules. Hematoxylin-eosin stain, × 160.

One could continue citing references from the literature showing a point of view which seems to parallel our own. However, there are relatively few references to the harmful effect of the use of endocrine therapy. Mimpriss,[6] Cabot,[7] Cole [8] and Evans have all observed definite degenerative processes produced by the injection of gonadotropic substance either in man or in the experimental animal. Denis Browne says "I submit that the hormone treatment of undescended testes is dangerous, useless and founded on an anatomic error." Johnson concludes that, "judged in the light of the outcome without therapy, endocrine therapy should be used only as an adjunct to oncoming puberty and in reality is not a necessity."

It is interesting to note the solicitous attitude of some authors who, after calling attention to the microscopic changes noted in undescended testes, say that "their observations make one question the advisability of waiting for the spontaneous descent of the testis." They also cite the poor results of operative correction to support their predilection for hormone therapy. The results of operation, however, in competent hands have become increasingly good and series published by Counseller [9] and by Walters and Thiessen [10] show that good to excellent results were achieved in from 92 to 93 per cent of patients operated on. Our own statistics show 87 per cent falling in these categories. This high percentage of good results, we are sure, has also been achieved by numerous operators in this country. The proponents of endocrine therapy have failed to recognize that the danger inherent in the use of larger doses of anterior pituitary-like substance is greater than the delay in waiting for spontaneous descent.

TABLE 1.—*Weights of Normally Situated and Cryptorchid Testes in Treated and Untreated Animals*

Rat No.*	Normally Situated Testes (Weight in Milligrams)	Cryptorchid Testes (Weight in Milligrams)
1	1,300	1,120
C 2	1,400	720
4	1,420	700
C 5	1,510	750
6	1,490	850
C 7	1,750	710
8	1,500	300
9	1,860	530
10	1,780	690
11	1,460	790
12	1,130	700
C 14	1,380	538
15	1,870	680
16	1,860	770
17	1,580	1,190

* C before rat number indicates untreated or control animal.

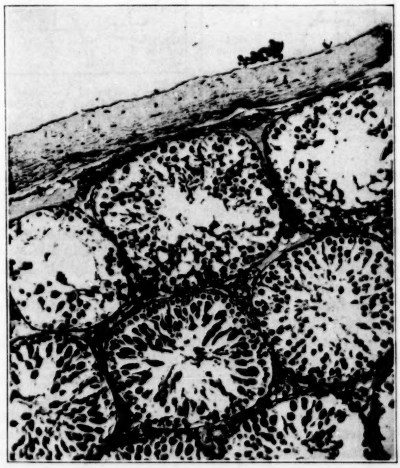


Fig. 5.—Section of cryptorchid testes from an untreated animal. Note slight reduction in spermatogenesis as compared with figure 4. Hematoxylin-eosin stain, × 140.

Before detailing the results of our experiments with anterior pituitary-like substance, we shall state our experience in the surgical correction of testes of patients

6. Mimpriss, T. W.: Treatment of Imperfect Descent of Testis with Gonadotropic Hormone, Lancet **1**: 497-499 (Feb. 27) 1937.
7. Cabot, Hugh: Management of Patients with Retained Testes, Radiol. Rev. & Mississippi Valley M. J. **58**: 198-203 (Nov.) 1936.
8. Cole, H. H.: On Biological Properties of Mare Gonadotropic Hormone, Am. J. Anat. **59**: 299-331 (July) 1936.
9. Counseller, V. S.: Cryptorchidism: Treatment and Results in 100 Cases, J. Urol. **30**: 327-343 (Sept.) 1933.
10. Walters, Waltman, and Thiessen, N. W.: Cryptorchidism, Proc. Staff Meet., Mayo Clin. **10**: 132-139 (Feb. 27) 1935.

who had received endocrine therapy. In the seven cases in which the larger dosage, or over 6,000 rat units, was given the testis was much smaller than in untreated cases or in those in which the smaller dosage was given.

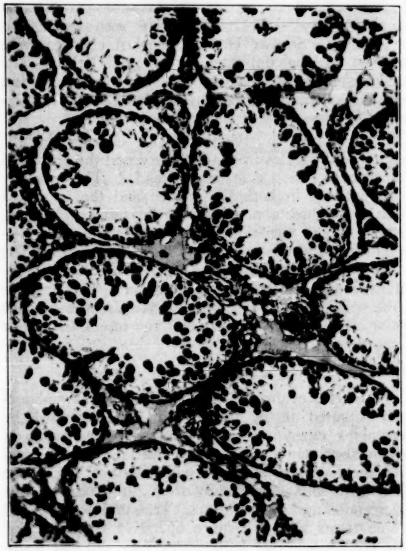


Fig. 6.—Section of cryptorchid testes from a treated animal. Note marked reduction in spermatogenesis and edema of interstitial tissue. Hematoxylin-eosin stain, × 140.

There was no exception to this rule. The surgical correction was much more difficult on account of the increased number and thickness of the adhesions

TABLE 2.—*Average Weights of Testes in Treated and Untreated Groups*

	Normally Situated Testes (Weight in Milligrams)	Cryptorchid Testes (Weight in Milligrams)
Rats received 200 rat units of anterior pituitary-like substance of pregnancy urine, total dosage	1,576	764
Rats received no hormone	1,510	678

encountered. The adhesions were not only profuse about the vessels of the cord and the component fascial and muscular structures but even around the testis itself, a condition not commonly observed by us in cases in which treatment was not given. Proper surgical correction of undescended testes depends largely for its success on a meticulous dissection and the removal or severance of fibrous bands, which are always present. Therefore the increased number and thickness of these bands make the operation in our hands much more difficult and time consuming. This view does not seem to be in agreement with that expressed by others.

Naturally we have not removed the testis in any of the aforementioned cases regardless of the degree of apparent degeneration and so cannot report on their microscopic appearance. As these all occurred in boys under 14 years of age, we hoped that regenerative processes might possibly take place after the cessation of endocrine therapy and the proper placement of the testis into the scrotum. Some testes, however, appeared to be so badly damaged that we have but little expectation of this taking place.

EXPERIMENTAL METHOD

Forty male albino rats were used in this study. They were all subjected to similar treatment and were similarly controlled. Among the last fifteen injected there were three groups of rats, each group consisting of litter mates, and we decided that in these groups our results would be most accurate and conclusive and therefore will detail only the results in this series. However, the results in the first twenty-five were similar to the groups consisting of litter mates.

All rats were made unilateral cryptorchids on the thirtieth day of life; the right testicle of each animal was left in its normal position. (In rats it is possible to render the animal cryptorchid with a minimum of trauma to the testis; in fact, practically by atraumatic operation.) In the first twenty-five rats injections of 50 rat units of anterior pituitary-like substance was given, in one group on the day following operation and in another on the thirty-first day after operation. Each

Fig. 7.—Cryptorchid testes from a treated animal. Note marked thickening of the capsule and leukocytic infiltration. Hematoxylin-eosin stain, × 140.

treated animal received 50 rat units a week for four injections. Controls for each series were carefully examined.

In the group of fifteen rats which was divided into groups of litter mates, the weights of the normally placed and the cryptorchid testes in the treated and

the untreated animals are shown in table 1. Group A consisted of five animals, three of which were injected and two were used as controls. Group B numbered six animals, five of which received injections and one was used as a control. Group C numbered four animals, three of which were injected and one was used as a control. The treated animals in this series also received 50 rat units of anterior pituitary-like substance at weekly intervals for four weeks, thus receiving a total dosage of 200 rat units. All animals were killed six weeks after the last injection of anterior pituitary-like substance. The testes were immediately removed, weighed and promptly fixed in 10 per cent solution of formaldehyde. Sections were embedded in paraffin and were stained with hematoxylin and eosin.

MICROSCOPIC EXAMINATIONS

Normally Situated Testes.—In both the injected and the control animals the normally situated testes showed no appreciable changes. The average weights for the normally situated treated animals closely approximated one another (tables 1 and 2). Furthermore, the administration of the hormone had no effect on spermatogenesis or on the interstitial tissues, as was seen in the cryptorchid testes. Active spermatogenesis was seen in the normally situated testes of all the treated animals and their capsules, and the interstitial tissue showed no changes.

Cryptorchid Testes.—All the cryptorchid testes, both treated and untreated, showed striking anatomic changes. These, however, were most marked in the animals injected with anterior pituitary-like substance. They may be divided into four groups: (1) changes in the capsule, (2) changes in the interstitial tissue, (3) changes in the seminiferous tubules and (4) alterations in weight.

1. Changes in the Capsule: These were observed only in the animals injected with anterior pituitary-like substance. At autopsy dense fibrous adhesions were grossly recognized between the visceral and the parietal layers of the tunica vaginalis, and the tunica albuginea was markedly thickened. Microscopically the thickened capsule was seen to be diffusely infiltrated with small round cells, intermingled with which were occasional polymorphonuclear leukocytes. Many young newly formed blood vessels were also seen. These changes were not observed in the cryptorchid testes of the uninjected control animals.

2. Changes in the Interstitial Tissue: The interstitial tissue in the cryptorchid testes, both in the treated and in the untreated animals, appeared to be increased in amount. In many of them there was considerable edema of the interstitial tissue, the cells of Leydig and other cellular elements being suspended in a pale, eosinophilic liquid. This was most marked in the animals that had been given the hormone. In some of these animals there was also an increased vascularity of the interstitial tissue.

3. Changes in the Seminiferous Tubules: The most striking microscopic changes observed in these testes were seen in the tubular epithelium. These changes consisted in a decrease in the number of the sex elements and failure of their development. This was seen in both the treated and the untreated cryptorchid testes but was much more marked in the former. Spermatids and mature sperms were seen occasionally in the cryptorchid testes of untreated animals but never in the treated ones. The tubules of the latter appeared shrunken and atrophic. Mature sperms were completely absent, the tubules being filled with Sertoli cells and spermatogonia. Occasionally the tubules were partially collapsed and in their lumens only remnants of sex cells were visible. Occasional partially or completely hyalinized tubules were seen throughout the sections. Similar but less marked changes were observed in the untreated cryptorchid testes. The tubules of the latter contained many spermatogonia and spermatocytes and occasionally mature sperms. Hyalinization of these tubules was not observed.

4. Alterations in Weight: The changes in the weights of the testes from the treated and the untreated animals are presented in tables 1 and 2. The normally situated testes in both the treated and the untreated animals weighed approximately the same. There is, however, some variation in the weights of the cryptorchid testes in the treated and untreated groups. The average weight of the former is 764 mg. and of the latter 678 mg., a difference of 12 per cent. This increase in the weight of the cryptorchid testes is probably due to the edema and hyperplasia of the interstitial tissue in the testes of these animals.

SUMMARY AND CONCLUSIONS

The careful evaluation of the position of the abnormally situated testis, which can be determined by painstaking examinations, is necessary. The group of abnormally situated testes which invariably will descend when they reach or approach adult size and weight are to be differentiated clinically from the group of true undescended and ectopic testes. True undescended and ectopic testes always require operative treatment for their correction. Retractile testes may descend spontaneously as late as the seventeenth year. Gonadotropic substance has no value in the preoperative care of true undescended and ectopic testes. Its routine use in retractile testes is not recommended. Gonadotropic substance is definitely harmful in larger dosage to testes which have not reached the scrotum. Experimental animals have shown a characteristic response to endocrine therapy when the testes have been made cryptorchid. The gross appearance of these testes corresponds closely to that of undescended testes in which a larger dosage of hormone had been received and in which operation was subsequently required to overcome a mechanical cause for the failure of the testes to reach the scrotum. Operation was done in a series of seven clinical cases showing marked evidence of degeneration after the use of hormone. The surgical correction of the undescended testis after endocrine therapy is not facilitated, as claimed by others, but is rendered more difficult.

25 East Washington Street.

Good Companions. — Parental example is probably the greatest single factor in training. What you yourself do is of greater influence than anything you can say especially if your actions belie your words. Your children will inevitably desire to be like you and to act like you. The pull is far stronger than the mere conscious desire alone. The imitative impulse, appearing about the time a child learns to talk, acts both intentionally and unconsciously as a highly developed, automatic, reinforcement in the copying of mothers' and fathers' habitual conduct and emotional attitudes.—Hohman, Leslie B., As the Twig is Bent, New York, Macmillan Company, 1940.

Clinical Notes, Suggestions and New Instruments

SUBACUTE ENDOCARDITIS AND SYSTEMIC MYCOSIS (MONILIA)

HENRY JOACHIM, M.D., AND SILIK H. POLAYES, M.D., BROOKLYN

As far as could be ascertained, no case of subacute bacterial endocarditis with systemic mycosis due to Monilia recognized during life has ever been reported in the literature. Dr. Emanuel Libman, who saw this case with us, referred us to a recent report by Friedman and Donaldson.[1] In their case nests of yeastlike cells were isolated from the aortic vegetations on postmortem examination of a patient who died of subacute bacterial endocarditis. However, the authors were unable to isolate the organism clinically or identify it on postmortem examination. Because of the rarity of this condition and the circumstances under which the infection occurred in our case, it was considered worthy of publication.

REPORT OF CASE

History.—F. M., a white man aged 48, American born, married, a bookkeeper, was admitted to the surgical service of the Cumberland Hospital on April 24, 1939, because of midabdominal pain of two days' duration.

The patient had been addicted to the use of morphine and heroin for twenty years. For eighteen months he had injected the drug intravenously. In the parlance of addicts, he was known as a "main line shooter." The technic of the intravenous injection consisted in filling a medicine dropper with a solution of morphine or heroin, attaching a hypodermic needle to the dropper and injecting the solution into the basilic vein of the left arm once daily. No aseptic or antiseptic cautions were observed. It was difficult to establish the daily dose administered, since the drugs were illicitly procured from narcotic venders who probably "thinned out" the amount sold. The patient was of the opinion that he used from 20 to 40 grains (1.3 to 2.6 Gm.) daily.

The patient averred that in January 1939 he ceased the use of the drugs on account of his financial inability to secure them and submitted himself for the treatment of his drug addiction. Since that time, he stated, he had absolutely refrained from the use of narcotics. He suffered from withdrawal symptoms such as salivation, joint and muscle pains, abdominal cramps and diarrhea. These symptoms persisted and he was treated for "rheumatism." He began to lose in weight and became progressively weaker. Fever developed. Two days prior to his admission to the hospital he took a sun bath for an hour. This was followed by a drink of orange juice. One hour later severe crampy pains developed in the upper part of the abdomen. These were accompanied by vomiting. The pains continued and spread to the lower part of the abdomen. Vomiting persisted with inability to retain any food or fluids. A surgical condition was suspected, for which he was admitted to the surgical wards of the hospital.

In 1910 the patient had an attack of gonorrhea without complications. He had diphtheria twelve years before admission. About seven years before admission he had been told that he had a heart murmur and about three years before admission he had pneumonia. Several months prior to admission, while being treated for his narcotic addiction, he was supposedly suffering from "rheumatism."

He smoked twenty cigarets daily and indulged only moderately in liquor.

The patient's father died of tuberculosis at the age of 35. Otherwise the family history was irrelevant.

Physical Examination.—On admission the patient's temperature was 102.6 F., pulse rate 114, respiratory rate 28 and systolic blood pressure 90. He was cachectic and had a sallow complexion. The pupils were regular and equal and reacted to light and in accommodation. The eyegrounds were normal. The heart was not enlarged to percussion. The rhythm was regular. A loud rough aortic systolic murmur was present. This could be auscultated over the entire chest anteriorly and was transmitted upward into the vessels of the neck. The aortic second sound was muffled. The abdomen was diffusely tender to palpation. Rigidity was not present. The liver edge was palpable about two fingerbreadths below the costal margin. It was soft and not tender. The spleen was palpable but not tender. No cyanosis or edema was noted. There was slight clubbing of the extremities. Along the course of the left basilic vein there was a streak of brown pigmentation.

Course.—May 3 a tender nodule appeared on the left palm (Osler node). Petechiae were noted in the conjunctivas, scrotum, left thigh and right inguinal region. May 7 it was noted that the cardiac murmur was intensified. May 9, sternal tenderness was elicited. May 13 the right eye became tender. Ophthalmologic examination showed no abnormality. May 14 the patient had a severe chill. His temperature was of the septic type with repeated chills. This was accompanied by fleeting joint and muscle pains. There were swelling and redness of the joints. The spleen enlarged rapidly and was painful and tender. Tender nodules developed on the soles of the feet. The patient became progressively weaker and died on June 13.

Fig. 1.—Medium power magnification of a granulomatous lesion in the subcutaneous tissue of the elbow. Note the huge foreign body giant cell (*A*) and large mononuclear cells accompanied by a marked fibroblastic reaction (*B*) about deposits of iron-free débris (arrows). Monilia organisms may be discerned with difficulty among the infiltrating cells. Reduced from a photomicrograph with a magnification of 110 diameters.

Laboratory Examinations.—Five blood counts were made between April 25 and May 30. The hemoglobin content varied between 66 and 70 per cent. The erythrocytes ranged between 3,500,000 and 4,300,000, while the leukocytes varied between 6,750 and 10,600 per cubic millimeter. The differential smears showed from 60 to 73 per cent polymorphonuclears, 17 to 31 per cent lymphocytes, 2 to 10 per cent monocytes, 0 to 2 per cent eosinophils and 0 to 1 per cent basophils.

The sedimentation rate varied from fifteen minutes to two hours for 18 mm.

The urine frequently showed traces of albumin, occasionally fine as well as coarsely granular casts, white cells and red cells.

Bacteriologic Study.—A total of eleven blood cultures were made. The first, on May 3, and each subsequent culture showed the presence of innumerable colonies of yeastlike cells.

Throat, stool and urine cultures failed to show any fungus. Cultures of the contents of the container from which the drugs were injected showed organisms identical with those obtained from the blood.

From the Departments of Medicine and Pathology of Cumberland Hospital.

Miss Florence Bittman of the Bacteriology Laboratory of Bellevue Hospital aided in the bacteriologic examinations.

1. Friedman, N. B., and Donaldson, Lilian: Subacute Endocarditis with Systemic Mycosis, Arch. Path. **27**: 394 (Feb.) 1939.

Biopsy.—The vein into which the drug was injected revealed the following features:

Macroscopically the specimen consisted of skin about 1 cm. in its greatest dimension and a section of a vein about 4 cm. in diameter. The epidermis and subcutaneous tissue were speckled with numerous areas of blue-black pigmentation. A silk ligature was found tied about one of the small veins.

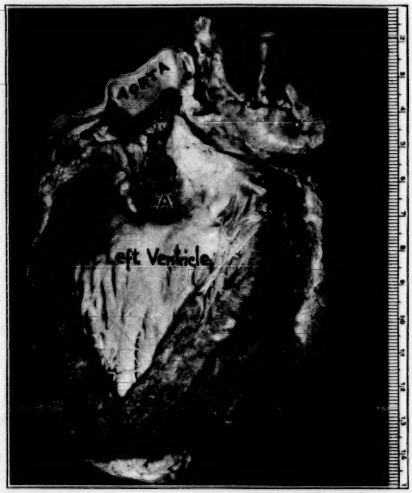


Fig. 2.—Left ventricle opened to expose the aortic valve and vegetations. Almost the entire right posterior aortic cusp (*A*) is destroyed by the vegetations (colonies of Monilia). Note the apex of vegetations (*B*) extending 4 cm. above the aortic ring.

On microscopic examination the skin and subcutis showed numerous deposits of iron-free, nondescript particles and fibrosis. Many of the particles were being engulfed by foreign body giant cells or surrounded by a reactive inflammatory zone, the infiltrates of which consisted predominantly of mononuclear and plasma cells. Occasional yeastlike cells were demonstrable among the infiltrating cells and in the interstices. Although the changes just described were demonstrable in the perivascular connective tissue, the vessel walls proper showed no changes.

The diagnosis was foreign body granulomas of the skin and subcutaneous tissue.

X-ray examination of the chest revealed clear pulmonary fields. The heart was mitral in configuration, not enlarged but with a marked elongation and tortuosity of the aorta.

Bacteriologic Description of the Organism.—Morphology: The organism was ovoid and averaged about 4 microns in diameter; there were atypical short mycelia. One of the Sabouraud subcultures showed distinct hyphae.

Staining Reaction: The organism was gram positive except for some of the mycelia, which stained pink.

Reproduction: This occurred by budding.

Cultural Characteristics: Nutrient, dextrose and blood agar mediums showed opaque yellow convex round nonhemolytic colonies after from forty-eight to seventy-two hours. The temperature of incubation was 37.5 C.

Stab culture on Sabouraud's medium yielded an inverted fir tree type of growth. In broth there were heavy sediment and slight cloudiness of supernatant fluid after seventy-two hours' incubation. In gelatin no liquefaction occurred.

Sugar reactions were as follows: There was no acid or gas in lactose and mannite. There were acid and about 10 per cent gas in maltose, saccharose and dextrose.

The provisional diagnosis was moniliasis.

Serologic Examination.—Agglutination tests performed with the fungus recovered from the blood culture and the patient's serum gave the following reactions:

Serum dilution 1:10, marked agglutination in five minutes.

Serum dilution 1:100, definite agglutination in twenty minutes.

There was no agglutination with saline solution or with normal human serum control.

The patient's serum agglutinated known cultures of Monilia albicans to a dilution of 1:640.

The bacteriologic as well as the serologic data conform to the general description of the Monilia group. Final complete identification must await further cultural differentiation.

Necropsy.—This was performed six hours post mortem.

General Examination: The body was emaciated. The flexor surfaces of both elbow regions were dotted with minute blue areas. The left cubital fossa presented a healed wound of a recent biopsy. Microscopic examination of the pigmented areas disclosed accumulations of nondescript iron-free black particles, many of which were engulfed by giant phagocytes and about which granulomatous changes were present, characterized by an abundance of foreign body giant cells (fig. 1). The granulomas involved perivascular lymphatics of the subcutaneous tissue and adjacent perimysium. In these areas were large mononuclear cells more than twice the size of the ordinary leukocyte. They contained hyperchromic round nuclei which occupied the major portion of the cell body. Throughout the inflammatory zones were numerous monilia organisms occurring singly or in small groups.

Sections of the median basilic and cephalic veins, as well as of the brachial arteries, failed to show any changes.

Cavities: The peritoneal cavity presented recent perisplenic and old perihepatic adhesions. Each pleural cavity contained 100 cc. of sanguineous fluid. There were also bilateral dense fibrous pleurodiaphragmatic adhesions. The pericardial cavity contained a slightly increased amount of fluid.

Cardiovascular System: The heart weighed 330 Gm. There were patches of fibrinoplastic exudate on the epicardium of the right atrium, the auricular appendage and the anterior

Fig. 3.—Right side of the heart exposed, showing the bulging, fluctuating mass of necrotic tissue and Monilia colonies perforating through the atrial wall just above the medial cusp of the tricuspid valve (arrow).

surface of the right ventricle. The myocardium of the left ventricle presented numerous scars, some of which involved the epicardium. The right posterior cusp of the aortic valve was almost completely replaced by a cauliflower-like gray pyramidal mass of vegetations which were engrafted on the base of the aortic cusp. The apex of the mass projected into the lumen of the aorta, 4 cm. above the aortic ring (fig. 2). At the

base it was continuous with a fluctuating mass of necrotic structure which bulged into and perforated the wall of the right atrium just above the medial cusp of the tricuspid valve (fig. 3).

Microscopic examination revealed the presence of a pancarditis. The epicardium at the sites mentioned showed an acute inflammatory process. The infiltrate contained many of

Fig. 4.—High power magnification of aortic vegetations. Note the reactive zone of mononuclear cells and fibroblasts at the base of the valve (*A*) and massive colonies of Monilia (*B*) held together by a firin network (*C*). Reduced from a photomicrograph with a magnification of 150 diameters.

the large mononuclear cells previously described. There was also an acute interstitial myocarditis (focal in some areas, diffuse in others) superimposed on an already existing extensive myofibrosis. The aortic vegetations were composed of a layer of fibrin and exudate covering massive colonies of Monilia. The latter constituted the major portion of the vegetations and in areas penetrated the fibrin layer. At the attachment of the mass to the aortic ring there was a reactive zone accompanied by fibroblasts in palisade arrangement and large cells (fig. 4). Beneath this layer there was marked calcium deposition. The mitral valve showed only fibrinous thickening. Monilia organisms occurring singly and in groups were demonstrable in all sections.

The aorta showed moderate atherosclerosis. The superior mesenteric artery, 3 cm. distal to its celiac junction, presented a globular aneurysm 1.2 cm. in diameter. Its intimal layers were dissected by a hematoma which was continuous with a layer of fibrin thrombus replacing intima. The adjacent media and adventitia showed arteritis with an infiltrate consisting mainly of small lymphocytes and large mononuclear cells.

The splenic artery showed occlusion of one of its middle hilar branches by a fresh thrombus.

The right renal artery presented a similar thrombus in one of its anterior branches.

Respiratory System: The larynx, trachea and bronchi were filled with sanguineous fluid. The lungs were voluminous and red. Bloody fluid flowed freely from their cut surfaces. Sections revealed areas of red hepatization alternating with areas of edema and emphysema. Monilia organisms were demonstrable in the exudate, which was predominantly of the mononuclear cell type.

Gastrointestinal System: The oral cavity was normal. The stomach was hugely distended. The rest of the tract showed only occasional mucosal hemorrhages.

Spleen: The organ weighed 780 Gm. and presented fibrinous perisplenitis. A thrombus in one of the middle hilar branches of the splenic artery had produced a nonsuppurative infarct which involved the entire midzone of the splenic parenchyma, from the anterior to the posterior margin and appeared across the entire diaphragmatic surface as a band of gray discoloration about 3 cm. in width. The pulp was hemorrhagic and the malpighian corpuscles were reduced in size. The parenchyma contained many large mononuclear cells similar to those already described. The sinuses were distended, many being filled with numerous myeloid cells and large phagocytes with ingested nuclei and red cells (fig. 5). Groups of Monilia were demonstrable throughout the section and numerous colonies of these were found in thrombi occluding the vessels.

Pancreas: This organ weighed 150 Gm. and was essentially normal.

Biliary System: The liver weighed 1,735 Gm. The right lobe extended almost to the pelvic brim. Sections showed acute hepatitis. The infiltrate was periportal in distribution and consisted mainly of large mononuclear cells. A calcified encapsulated (parasitic?) cyst resembling Pentastoma denticulatum was found beneath Glisson's capsule of the right lobe. The rest of the biliary tract, including the gallbladder and bile ducts, showed no changes.

Urinary System: The right kidney weighed 165 Gm. and the left 150 Gm. The organs were moderately arteriosclerotic. Both showed small nonsuppurative infarcts caused by emboli composed of colonies of Monilia in a number of the smaller branches of the renal arteries (fig. 6). There were also foci of interstitial nephritis in which were numerous large mononuclear cells. Deposits of calcium were present in the tubules and interstices of the apical portions of some of the pyramids. A discrete small area of gray discoloration noted in the cortex of the right kidney was found to be a papillary adenoma of tubular origin. The rest of the urinary tract showed nothing remarkable.

Lymphatic System: The axillary and periaortic lymph nodes presented sinuses distended with large phagocytes and congested vessels. Monilia was demonstrable in sinuses and interstitial tisue.

Genital, Endocrine and Skeletal Systems: No changes were noted.

Central Nervous System: The brain weighed 1,400 Gm. Portions of the anterior frontal, posterior occipital and right temporal lobes showed brown discoloration of the meninges due

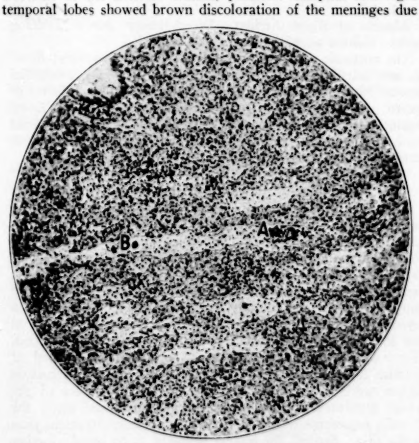


Fig. 5.—Representative section of spleen showing the characteristic large mononuclear cells (*A*) and myeloid cells (*B*) in distended sinuses. Reduced from a photomicrograph with a magnification of 150 diameters.

to hemorrhage. These areas showed an intense inflammatory reaction in the meninges. In the infiltrate were found many mononuclear cells and occasionally Monilia. The inflammatory process followed along blood vessels deep into brain tissue, where minute abscess-like collections of exudate were demonstrable (fig. 7). The choroid plexus showed perivascular collections of mononuclear cells.

The spinal cord showed foci of hemorrhagic extravasation into the anterior cornua.

The eyes showed occasional petechiae in the conjunctiva and eyegrounds, including the optic disks.

Bacteriologic Examination: Vegetations of Aortic Valve. Direct smear showed budding fungi. Culture showed Monilia, Streptococcus nonhaemolyticus and Bacillus coli.

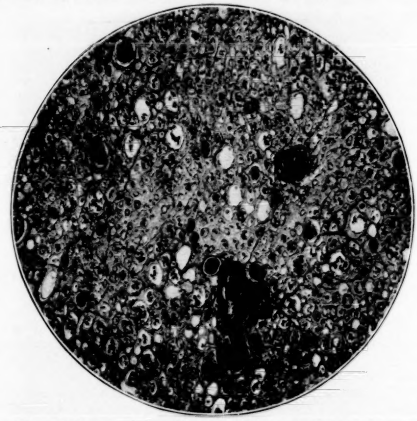


Fig. 6.—High power magnification of kidney showing mycotic emboli occluding smaller branches of renal arteries. Reduced from a photomicrograph with a magnification of 150 diameters.

Pericardial Fluid. Direct smear showed a few small chains of streptococci. Culture showed Streptococcus nonhaemolyticus and B. coli.

Abscess of Right Atrium. Direct smear showed budding fungi. Culture showed Monilia and B. coli.

The anatomic diagnosis was: 1. Monilia endocarditis; fibrosis and calcification of the aortic valve. 2. Acute interstitial myocarditis and pericarditis; myofibrosis cordis. 3. Infarcts of spleen and kidneys. 4. Hemorrhagic pneumonitis. 5. Acute hepatitis. 6. Meningo-encephalitis and hemorrhages of spinal cord. 7. Aneurysm of superior mesenteric artery. 8. Subcutaneous foreign body granulomas of upper extremities.

COMMENT

This case presents a number of interesting features. Besides being unique clinically, it also offers a number of problems which still remain unsolved. The absence of any demonstrable changes in the large veins into which the patient was purported to have injected the drugs leaves one in doubt as to the exact course followed by the Monilia organisms from their port of entry in the skin. Clinically it was considered likely that a mycotic granuloma of an infected vein of the forearm acted as the focus of infection which produced the systemic mycosis. However, the granulomas described cannot be considered as reaction to Monilia for two reasons: First, the granulomatous lesions were observed in the skin only at the sites of the needle punctures and not elsewhere in the tissues, where the Monilia organisms were found to be even more prevalent than in the skin. Second, the lesions appeared to be merely foreign body giant cell reactions to the débris which was introduced into the subcutaneous tissue with the needle. It is more probable, therefore, that the Monilia organisms gained access to the circulation (and thence to the aortic valve) or directly to the blood stream with the insertions of the needle into the lumen of the vein, but without producing any granuloma in the latter.

Another interesting problem is the question of primary infection. It is not possible to determine with any degree of certainty whether Monilia was the primary etiologic agent which produced the aortic lesion. Few small chains of streptococci observed on direct smear of the pericardial fluid, as well as the nonhemolytic streptococcus in the cultures obtained from the vegetations, suggest the possibility of a preexisting streptococcic infection in the aortic valve with a superimposed infection by Monilia. However, the presence of B. coli along with the streptococci in the postmortem cultures of the vegetations and pericardial fluid points to the greater likelihood that the streptococcus was a postmortem, rather than a primary, invader. This view is strengthened by the facts that morphologically and in the tissue sections only Monilia was demonstrable in the vegetations and that streptococci could not be recovered from any of the numerous blood cultures which were made during life, all of which showed pure cultures of Monilia.

The immunologic aspects of this case are intriguing. The patient's serum gave positive reactions with known cultures of Monilia albicans, although culturally the organism answers more to the description of Monilia psilosis. However, the final identification of the organism has not yet been made. The agglutinative titer of the patient's serum before death was high, dilutions of 1:100 having clumped in less than twenty minutes the suspensions of Monilia which had been recovered from the patient's own blood.

The nature of the more pertinent histologic changes in this case are also worthy of emphasis. The changes which were observed throughout the tissues, although not pathognomonic, are characteristic. The outstanding feature of the inflammatory infiltrate was the peculiar monocytic response. The splenic pulp and sinuses, the pulmonary alveolar exudate, the reactive zone at the base of the aortic valve and even the infiltrating cells in the periphery of the granulomas all showed a monotonous type of large monocyte as the predominating element of the infiltrate. The reaction resembles the tissue response observed early in virus infections, rheumatic fever, influenza and related diseases. Aside from the occasional Monilia organisms present in the tissues, no definite changes were observed which could be interpreted as characteristic of a fungous infection.

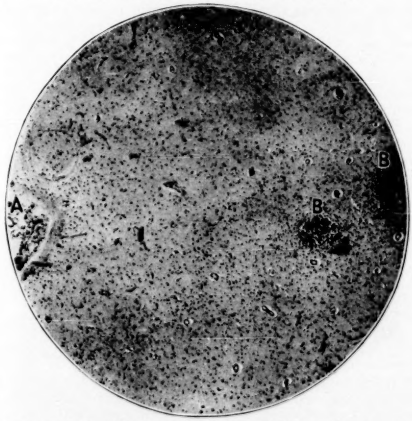


Fig. 7.—Section through the frontal lobe showing meningeal exudate (*A*) and abscess-like collection of exudate (*B*) in the deeper cerebral tissue. Reduced from a photomicrograph with a magnification of 60 diameters.

SUMMARY

1. A rare case of subacute endocarditis with systemic mycosis (Monilia) was observed.

2. Various problems were presented by the histologic, bacteriologic and immunologic studies of this case.

3. No similar case could be found in the literature.

871 Park Place.

A CASE OF ARSENIC PERIPHERAL NEURITIS TREATED WITH SYNTHETIC VITAMIN B_6 AND ALPHA-TOCOPHEROL

R. W. VILTER, M.D.; C. D. ARING, M.D., AND T. D. SPIES, M.D.
CINCINNATI

This report [1] concerns observations on the effect of parenterally administered vitamin B_6 and alpha-tocopherol in a case of arsenic peripheral neuritis which had been treated unsuccessfully with thiamine hydrochloride.

S. A., a salesman aged 35 who had been in good health, was admitted to the Cincinnati General Hospital on Nov. 28, 1939, with acute arsenic poisoning following the ingestion of a teaspoonful of "rat embalmer" (arsenic trioxide). Vomiting and diarrhea subsided after a week of hospitalization and general supportive therapy. At the end of the second week he complained of numbness and tingling sensations in his hands and right foot. (His left leg had been amputated traumatically in 1930).

Stabbing and cramping pains appeared in his hands and the calf of his right leg and became so severe that he was unable to rest. His hands became so weak that he could not pick up small objects. The skin of his hands, forearms, foot and leg were extremely hyperesthetic to stroke and to pinprick and anesthetic to light touch with cotton. Definite "afterglow" of unpleasant sensation followed rather light stroking of the palms of his hands. Motor power in his hands was reduced to 20 units (normal from 130 to 200 units), as measured by a spring type of dynamometer. The deep reflexes were absent in the leg and hypo-active in the arms. He noted that his upper extremities were considerably more painful and weak than his lower.

Routine laboratory tests, including examination of cerebrospinal fluid, gave negative results. Analysis of the hair, finger nails and toe nails for arsenic, performed by Dr. Robert A. Kehoe of the Kettering Laboratory of Applied Physiology of the University of Cincinnati, showed the following values of arsenic trioxide: distal hair, 1.1 mg. per hundred cubic centimeters; proximal hair, 7.7 mg.; toe nails, 9.1 mg.; finger nails, 4.7 mg. (normal hair and nails = 0.1 mg. or less).

The patient was treated with 50 mg. daily of thiamine hydrochloride in physiologic solution of sodium chloride, intravenously for three weeks after the onset of the neuritis, without influencing the condition. After administration of thiamine was discontinued, the patient was given 50 mg. of alpha-tocopherol intramuscularly twice daily for one week, with no subjective or objective improvement. Then, 20 mg. of synthetic vitamin B_6 in sterile physiologic solution of sodium chloride was given intravenously twice a day for three days. Within four hours after the first injection, the patient volunteered that his discomfort was much less than at any time since the onset of his illness. During this three day period there was a striking increase in strength (from 20 to 60 units), as measured in dynamometer units, and a decrease in hyperesthesia, deep pain and cramping sensations. A relapse to the original level of discomfort and weakness occurred when injections of physiologic solution of sodium chloride were substituted for the vitamin B_6. Relapses following the substitution of saline solution or thiamine hydrochloride for vitamin B_6 and remissions when vitamin B_6 was readministered were observed three times during the next six weeks. Vitamin B_6 was the only substance which caused a remission, but improvement was more spectacular and rapid when alpha-tocopherol, 50 mg. intramuscularly, was given in conjunction with vitamin B_6. Ten weeks after the onset of peripheral neuritis all medication was discontinued, and the patient was discharged from the hospital. His strength was almost normal (110 dynamometer units); he had no pain or hyperesthesia but his hands and his foot were hypesthetic to pinprick and light touch. Follow-up examination three weeks later showed the same evidence of chronic nerve damage as was present at discharge.

From the Departments of Internal Medicine and Neurology, University of Cincinnati College of Medicine. These studies were aided by a grant from the Rockefeller Foundation.

1. Since cases of peripheral neuritis due to arsenic are rare, we feel that these encouraging results should be known so that other investigators may assess the effectiveness of these vitamins in similar cases.

SUMMARY

Partial remission of a severe polyneuritic syndrome due to arsenic was induced rapidly with vitamin B_6. A relapse occurred on each of three occasions when thiamine hydrochloride or physiologic solution of sodium chloride was administered, and vitamin B_6 discontinued. The most spectacular remissions occurred when vitamin B_6 and alpha-tocopherol were administered concurrently. To maintain the improvement, these substances had to be administered daily.

HEMANGIOMA OF THE GASTROINTESTINAL TRACT

PERRY N. PIEROSE, M.D., LOS ANGELES

This report includes the record of one case in which hemangioma of the gastrointestinal tract was proved and a review of the literature concerning this condition. This case is of particular interest because the symptoms were of fifteen years' duration and were severe from the onset and because of the eventual correct diagnosis and successful treatment.

REPORT OF CASE

History.—A woman aged 40, a Caucasian, had been told that during the three days following birth she passed stools which contained bright red blood; this significant fact in her past history should perhaps be emphasized at this point. A summary of the history reveals that the first symptom of her present condition came on rather suddenly in 1926 when she was 29 years of age and consisted of great weakness. This was followed by pallor, tarry stools and "extreme anemia." The symptoms developed suddenly, were not accompanied by pain and subsided while the patient rested in bed at home; she did not call a physician at this time. Following this experience she was admitted to the Los Angeles County Hospital six times during the next thirteen years. On each admission the characteristics of her condition were those already enumerated. Following each of these episodes the patient's condition would improve, apparently as a result of bed rest, transfusions with whole blood, a well balanced, adequate diet and administration of iron. The diagnosis was at all times indefinite and uncertain and the cause of her condition remained obscure and unexplained. Exploratory laparotomy was done in 1932 and again in 1933, but the cause of her symptoms was not found.

The experience that brought the patient to the hospital at the time of her last entry, Feb. 10, 1939, was a repetition of the symptoms and changes that characterized all her attacks. There was no history of intolerance of any food, epigastric distress, chest pain, chills, night sweats or loss of weight.

Examination.—The patient was well developed, well nourished and extremely pale; she did not appear to be in distress but gave the impression of being very sick. She was rational and cooperative. Her temperature was 99 F., pulse rate 130, respiratory rate 26 and blood pressure 116 systolic, 84 diastolic. Routine examination of the head revealed no abnormalities of note. Chest resonance, breath sounds and the size of the heart were within normal limits. A soft systolic murmur was heard at the apex. Two old healed surgical scars were present in the epigastrium. There was no abnormal tenderness or rigidity of the abdominal wall. The liver, kidneys and spleen were not palpable and no abnormal masses were found. Peristalsis was normal. Examination of the external genitalia, pelvis, rectum, spine and superficial lymph glands revealed no noteworthy abnormalities. The extremities were well proportioned and symmetrical. Petechiae or other discoloration of the skin was not found. The reflexes were normal.

Laboratory examinations revealed hemoglobin 18 per cent (Sahli), erythrocytes, 1.7 million, leukocytes 16.6 thousand and of normal distribution. The urine showed no albumin or sugar and microscopic examination gave essentially negative results. The blood Wassermann and Kahn reactions were negative. The stool gave a strongly positive reaction for occult blood.

Immediate treatment consisted of transfusions with whole blood, a general diet and iron by mouth; improvement was remarkable, but the stools continued to give positive reactions for occult blood.

From the Medical and Surgical Services of the University of Southern California School of Medicine in the Los Angeles County Hospital.

Summary of Admissions.—From the time of onset of symptoms in 1926 she frequently experienced weakness, passed tarry stools and became pale. These were her complaints when she entered the Los Angeles County Hospital for the first time, Dec. 12, 1932. She was weak and pale. The blood pressure was 120 systolic, 80 diastolic, hemoglobin content 35 per cent (Sahli), erythrocyte count 1.9 million, leukocyte count 10,000 and differential normal. The urine was normal. By x-ray examination of the gastrointestinal tract the duodenum was considered to be slightly enlarged, passage of barium sulfate through it was somewhat delayed, and it was suggested that these changes might result from the presence of a duodenal polyp. An enema of barium sulfate revealed no abnormalities of the colon.

Exploratory laparotomy was performed and a peculiar band was found along the antemesenteric border of the jejunum, which produced in it an appearance similar to that seen in the large intestine. Sacculations containing enlarged blood vessels and engorgement of the smaller vessels were found in the lateral walls of the jejunum. Careful examination of the duodenum revealed no indication of polyp or ulcer. The diagnosis on discharge was "anomaly of the intestine (intestinal band)."

On April 10, 1933, the patient entered the Los Angeles County Hospital again, complaining of dark stools, anemia and flatulence. The results of physical examination were essentially those previously described. The hemoglobin content was 17 per cent and the erythrocyte count 1.6 million; the urine was normal and the stools gave a strong reaction for occult blood. After improvement of her condition she was removed to a private hospital. A diagnosis of possible bleeding ulcer of the small bowel was made and exploratory laparotomy was performed on May 5. The antemesenteric band described at the previous operation and increased vascularity in the wall of the upper portion of the jejunum were noted. The cause of hemorrhage from the bowel was not found.

A diagnosis of vicarious menstruation from the bowel was next made by a private physician. Artificial menopause was produced by giving high voltage roentgen therapy over the ovaries. Within one week after the last of these treatments the patient had the most severe hemorrhage from the bowel she had yet experienced, Dec. 12, 1933. She was admitted to the Los Angeles County Hospital and the hemoglobin content was estimated as 8 per cent. Following transfusions, a high caloric diet and iron therapy, she recovered.

The next admission was on June 10, 1935. The complaints and manifestations were essentially those presented on previous entries. Hemoglobin was 26 per cent and the erythrocyte count 1.2 million. The usual treatment was given, she recovered and she was discharged with a diagnosis of endometriosis of the bowel and secondary anemia. This hospital experience was repeated in December 1938. The hemoglobin at this time was 8 per cent. The cause of hemorrhage had not been determined, although extensive studies had been made. Improvement followed the usual treatment but was followed two months later by another and more severe attack.

At this time a critical review of the entire situation was made. The principal features were more or less continuous hemorrhage from the bowel, severe exacerbations at frequent and irregular intervals and the presence of highly vascular sacculations in the walls of the upper portion of the jejunum, described at each of two exploratory laparotomies. In view of these facts the great mass of negative factors and the continued symptoms, it was suggested that a telangiectatic hemangioma of the jejunum would explain her symptoms and condition and would be in keeping with observations made concerning the jejunum at the two operations.

Laparotomy was again performed March 1, 1939. The increased vascularity of the jejunum was again observed. Telangiectases were present in the serosa of the jejunum and the proximal portion of the ileum. Three feet of small bowel extending from 1 foot distal to the origin of the jejunum downward was removed and an end to end anastomosis made.

Pathologic Examination.—The serosal surface of the specimen of bowel was very hyperemic. The mucosa was stained with bile and bright red blood but did not appear to be hyperemic or injected. No bleeding points or dilated vessels could be seen on the mucosa. By microscopic examination of numerous sections of the jejunum, increased vascularity was seen in all layers. Large spaces lined with endothelial cells and containing blood were found in the serosa and muscularis. Occasional plexiform groups of small thin walled vessels were also present. An area of recent mucosal hemorrhage and a break in the continuity of the mucosal surface were found. The pathologic diagnosis was diffuse telangiectatic cavernous hemangioma of the jejunum.

Follow-Up Studies.—A record of monthly postoperative follow-up studies indicates that the patient has been free from symptoms and leading a normal life for a period of more than nine months.

COMMENT

A review of the literature indicates that benign tumors of the gastrointestinal tract are rare and that vascular tumors are especially rare in this group. Kornmann [1] states that hemangioma constitutes only 7 per cent of all benign tumors. From the surgical and autopsy material of the Johns Hopkins Hospital Geschickter and Keasbey [2] in 1935 reviewed the records of 570 patients who had been found to have tumors of the blood vessels. Of these, only ten were found to have hemangioma of the internal viscera including mesentery, kidneys and gastrointestinal tract.

Gascoyen [3] in 1860 published the record of one patient who was found to have angiomatosis involving the parotid gland, skin, intestine and liver. The death of a patient as a result of a single massive hemorrhage from an ulcerated hemangioma of the duodenum was described by Laboulbene [4] in 1872. Paci [5] described in 1882 an extraordinary observation in which a patient evacuated spontaneously a large cavernous hemangioma and a large amount of blood following violent purging. The records of patients whose symptoms and signs were similar to those which accompany acute appendicitis were published by Shillito [6] in 1921 and Landois [7] in 1925. At operation these patients were found to have cavernous hemangiomas in the ileum a few inches from the ileocecal valve. Double intussusception at the site of a cavernous hemangioma was described by Nicoll [8] in 1899. A rare condition in which the entire gastrointestinal tract was involved by multiple hemangiomas was described in 1910 by Winternitz and Boggs.[9] The removal of a hemangioma from the duodenum after it had been located by x-ray examination was done by Judd and Rankin [10] in 1922. A review of the literature by Brown [11] in 1924 indicated that hemangioma of the gastrointestinal tract, not including the stomach, had been reported in twenty cases. Brown classified gastrointestinal hemangioma as follows:

1. Multiple tumors of vascular arcades appearing as reddish nodules situated in the submucosa and connected with either an artery or a vein: (*a*) nevi, (*b*) cavernous hemangioma.

2. Submucous tumor which grows toward the lumen of the bowel and may ulcerate the overlying mucosa by pressure and trauma.

3. The submucosal hemangioma, which may grow to such a size that it may either obstruct the lumen of the bowel or cause a change in normal peristalsis, producing intussusception.

4. The diffuse, ringform hemangioma which begins in the submucosa involving the muscularis and constricts the lumen of intestine and is capable of producing intestinal obstruction.

McClure and Ellis [12] published in 1930 the records of twenty-five patients who had been found to have hemangioma of the gastrointestinal tract. Of these, fourteen were single and eleven multiple. The records of two additional patients and a complete review of the literature were published by Kaijser [13] in 1936. He classified seventy-four verified instances of hemangioma of

1. Kornmann: Zentrallbl. f. Chir., 1913, p. 1427.
2. Geschickter, C. F., and Keasbey, L. E.: Am. J. Cancer **23**: 568 (March) 1935.
3. Gascoyen: Tr. Path. Soc. London **11**: 268, 1860.
4. Laboulbene: Bull. Acad. de méd., Paris **1**: 462-464, 1872.
5. Paci, A.: Sperimentale, **49**, 1882.
6. Shillito, M.: Pennsylvania M. J. **24**: 421 (March) 1921.
7. Landois, F.: Beitr. z. klin. Chir. **133**: 685, 1925.
8. Nicoll: Brit. M. J. **1**: 842, 1899.
9. Winternitz, M. C., and Boggs, T. R.: Bull. Johns Hopkins Hosp. **21**: 203, 1910.
10. Judd, E. S., and Rankin, F. W.: Ann. Surg. **76**: 28 (July) 1922.
11. Brown, A. J.: Surg., Gynec. & Obst. **39**: 191 (Aug.) 1924.
12. McClure, R. D., and Ellis, S. W.: Am. J. Surg. **10**: 241 (Nov.) 1930.
13. Kaijser, R.: Arch. f. klin. Chir. **187**: 351 (Nov.), 661 (Jan.) 1936.

the gastrointestinal tract into five groups, which may be summarized as in the accompanying table.

Kaijser's "hemangioma simplex" group is referred to by Ewing [14] as being synonymous with "telangiectasis." Kaijser also included a fifth group in his classification, "hemangiomatosis." Cases under this classification present hemangiomas in other organs in addition to those found in the gastrointestinal tract.

The records of three patients who were found to have hemangiomas were published by Ackerman [15] in 1937. One of these patients had multiple hemangiomas of the small intestine, large intestine and gallbladder. This patient died as a result of hemorrhage following perforation of the tumor retroperitoneally, which is extremely rare. A second patient presented a solitary hemangioma of the jejunum and a third presented multiple hemangiomas of the jejunum and ileum. Familial telangiectatic gastric and duodenal disease in a woman aged 62, verified at autopsy, was described by Schuster [16] in 1937. She was found also to have telangiectasis in the skin, nose, mouth, pharynx, larynx and trachea. A report of two patients, members of the same family, suffering from massive gastric hemorrhages resulting from gastric telangiectatic bleeding, was published by Goldstein [17] in 1937. Hemangioma involving all of the jejunum and part of the ileum was found by Peyton [18] in 1938 at laparotomy on a youth aged 15. Buie and Nesselrod [19] reported

Kaijser's Classification of Verified Instances of Hemangioma of Gastrointestinal Tract

Classification (Kaijser)	Pinpoint Multiple Varicosities	Diffuse Infiltrating Cavernous Hemangioma	Circumscribed Cavernous Polypoid Hemangioma	Hemangioma Simplex (Telangiectasis)	Hemangiomatosis
Group	I	II	III	IV	V
Sex	24 M; 3 F	14 M; 8 F	5 M; 5 F	5 M; 2 F	2 M; 5 F; 1 ?
Age variation	26-79	3 mo.-48 yr.	15-62	3 mo.-64 yr.	2 mo.-61 yr.
Location:					
Esophagus	2	1	..	..	..
Stomach	2	..	..	2	2
Duodenum	..	..	..	2	..
Jejunum	9	..	..	1	..
Ileum	7	..	..	1	..
Meckel's diverticulum	..	..	1	..	..
"Small intestine"	..	7	4	1	3
Cecum	..	..	..	1	1
Sigmoid flexure	..	7	1	..	..
Rectum	3	12	3	..	..
"Large intestine"	9	..	..	..	2
"Gastrointestinal tract"	..	..	1	..	6
Total cases	27	22	10	7	8

a case in 1938 in which diffuse cavernous hemangiomas of the rectum and right renal pelvis occurred. The patient, a man aged 28, died as a result of multiple hemorrhages from the rectum. Successful surgical treatment of a patient who had hemangioma of the sigmoid was recorded by Bancroft [20] in 1931. After a colostomy was performed, the superior hemorrhoidal vein was ligated and then injected with 10 cc. of 40 per cent sodium salicylate. Exploratory laparotomy, closure of the colonic stoma, cecostomy and appendectomy were done on this patient eleven months after the original operation.

SUMMARY AND CONCLUSION

A patient who suffered from telangiectatic cavernous hemangioma involving the jejunum and upper ileum underwent surgical removal of the hemangiomatous portion of the intestine, which greatly improved her condition.

When a patient experiences repeated attacks of melena which cannot be explained by a thorough study of the history, physical manifestations and laboratory examinations, the possibility of hemangioma of the gastrointestinal tract should always be considered.

14. Ewing, James: Neoplastic Diseases, ed. 3, Philadelphia, W. B. Saunders Company, 1928, p. 241.
15. Ackerman, L. V.: Am. J. Cancer **30**: 753-757 (Aug.) 1937.
16. Schuster, N. H.: J. Path. & Bact. **44**: 29-39 (Jan.) 1937.
17. Goldstein, H. L.: M. Rec. **146**: 530-533 (Dec.) 1937.
18. Peyton, William: Minnesota Med. **21**: 590-593 (Aug.) 1938.
19. Buie, L. A., and Nesselrod, J. P.: Surgery **3**: 379 (March) 1938.
20. Bancroft, F. W.: Ann. Surg. **94**: 828-838 (Nov.) 1931.

Special Article

CONFERENCES ON THERAPY

TREATMENT OF BLOOD DISORDERS

VIII. HEMORRHAGIC DISEASES

NOTE.—*These are actual reports, slightly edited, of conferences by the members of the Departments of Pharmacology and of Medicine of Cornell University Medical College and the New York Hospital, with the collaboration of other departments and institutions. The questions and discussions involve participation by members of the staff of the college and hospital, students and visitors. The next report will concern "Treatment of Blood Disorders: IX. Management of Polycythemia and Hodgkin's Disease."*

DR. CLAUDE E. FORKNER: Today we take up hemorrhagic diseases; the first part of the program will deal especially with hemophilia. Dr. Patek, formerly of the Thorndike Laboratory in Boston and now with the Research Division of Welfare Island Hospital, will talk about the therapeutic aspects of hemophilia.

THERAPEUTIC ASPECTS OF HEMOPHILIA

DR. ARTHUR J. PATEK JR.: The measures advocated for the treatment of hemophilia may be separated, for the sake of convenience, into two general groups. The first may be classified as empirical therapy, the second as rational therapy. The first group includes measures that have been tried because they were shown to be effective in other conditions that resemble hemophilia in certain aspects of their symptomatology. Unfortunately not one of these procedures is of established value. They include the administration of vitamin concentrates, calcium salts, extracts from liver, lung, placenta and bone marrow, and numerous other preparations.

The rational therapy for hemophilia or, indeed, for any disorder depends on an understanding of the etiology and of the pathologic physiology of the disease. Obviously the etiology of hemophilia is related to an inborn fault. Since hemophilia is sex linked, it was supposed that the disease might be related to an endocrine defect. With this in mind Birch and others administered ovarian substance and female sex hormones to patients with hemophilia. Subsequent trial of this therapy by others has been disappointing. Moreover there was little, if any, evidence that patients with hemophilia lacked estrogenic substances. Nevertheless it may well be that there is a regulator for the clotting mechanism which in some manner is related to the sex hormones. The regulation of salt metabolism by the adrenal cortex might serve as an analogy.

In recent years attention has been directed to the blood clotting mechanism itself, which appears to be the immediate locus of difficulty. The various studies of this problem agree that the clotting of hemophilic blood is retarded. The retardation of clotting appears to take place in the first phase, or in the conversion of prothrombin to thrombin. There are differences of opinion concerning the fault at this point. Some investigators attribute the delay to a qualitative change in prothrombin, others to the lack of available thromboplastin, still others to the lack of an unknown substance which is present in normal plasma and which may be precipitated with the globulin fraction of the plasma. Certain workers incriminate the blood platelets in the problem, while others believe that the clotting defect bears no essential relation to the blood platelets. From the point of view of treatment these differences of opinion are of no immediate concern. However, from

these various studies several practical measures for the treatment of hemophilia have evolved.

These measures are based on the observation that transfusion with normal blood shortens the hemophilic clotting time. The maximal effect from transfusion is almost immediate. In the course of from eighteen to forty-eight hours there is a gradual return of the clotting time to its original, abnormal value. The transfusion with 100 cc. of blood is as effective as the transfusion with 500 cc. Therefore, unless the patient urgently needs hemoglobin, a transfusion of 100 cc. of blood at twelve hour intervals is preferable to a transfusion of 600 cc. at three day intervals.

Transfusion of normal citrated plasma is also effective in reducing the clotting time of hemophilic blood. There are certain advantages to its use. It may be stored for weeks in the ice box without appreciable change. It may be administered without regard to blood groups. In my experience, at least, no untoward reactions have followed the repeated administration of 100 cc. of pooled plasma. When using plasma for this purpose it is advisable to take the precaution of passing it through the Berkefeld filter to remove particulate matter.

In the treatment of superficial bleeding, as from the nose or tooth sockets, the local application of certain tissue extracts and of blood derivatives has been shown to be of help. Perhaps the most potent of these are the dried "globulin substance" and dried thrombin. These substances are stable in dried form. They are obtainable from animal sources. If these are applied in powdered form to the surface of moistened gauze and packed against the bleeding point, they are usually effective. A dry or powdered preparation is preferable to a liquid because it is not washed away so readily by the oozing blood.

There are several clinical features of the disease that I should like to stress, since they are not usually emphasized. The first of these relates to intercurrent infections. It is very common to observe bleeding episodes occurring either with infection or several days after the onset of infection. Indeed, the bleeding point may bear a relation to the site of infection, such as epistaxis with rhinitis, or retropharyngeal bleeding with pharyngitis, or bleeding gums with abscessed teeth. It is sometimes said that hemophilia is milder in summer than in winter. This seasonal variation in hemophilia more probably is related to the upper respiratory infections in winter.

The commonest complication of hemophilia is hemarthrosis. When this occurs, small transfusions should be given for several days to prevent further bleeding. The joints become swollen, tender and painful. If bleeding extends into the tissues about the joint, the overlying skin becomes warm and discolored. Pain and discomfort are alleviated by the administration of salicylates and by immobilization of the joints in cotton wool swaths or loose splints. After the acute symptoms subside, gentle massage, radiant heat and active motion may be tried. In my opinion the ankyloses and deformities resulting from hemarthroses are due in part to the premature resumption of joint motion.

Surgical emergencies present the most difficult decisions. Hemorrhage in the submucosa of the posterior pharynx, in the body of the tongue or in the tissues of the neck may all but strangle these patients. However, counterpressure from the distended tissues generally checks the bleeding in these areas. In such instances it is best to give transfusions and to avoid surgical intervention. Bleeding into the abdominal wall or cavity may simulate peritonitis or appendicitis. Bleeding in the urinary tract may produce renal or ureteral colic. Here too treatment should be palliative. Indeed, the simplest and safest rule to follow is to avoid surgical procedure unless it is unavoidable. Under such circumstances it is essential to prepare the patient by transfusions both preoperatively and postoperatively. Although I have never seen it applied, the transfusion by means of the continuous drip method should be ideal for such emergencies. The operative risk in hemophilia is enormous.

THROMBOCYTOPENIC PURPURA

DR. FORKNER: Before we discuss Dr. Patek's contribution I think we will ask Dr. Reznikoff to talk about thrombocytopenic purpura.

DR. PAUL REZNIKOFF: Thrombocytopenic purpura ought to be discussed by the surgeon because treatment is, for the most part, surgical. Many suggestions have been made regarding nonsurgical methods of treatment. For a time vitamin C was given in large amounts, but I am sure that all workers agree that in typical thrombocytopenic purpura vitamin C is valueless. Then Dr. Mettier tried roentgen therapy of the spleen, and, while he feels that he has seen some temporary improvement, most workers who have tried it have not substantiated these results and are not enthusiastic about irradiation of the spleen. Of course, watchful waiting and transfusions have been used in many cases. We hesitate to operate on a patient who is bleeding profusely and who is not a good surgical risk. I believe that one patient who was operated on here had a red cell count of less than a million, and that is not a happy prospect for the surgeon. In such cases transfusions are given, and many reports tend to show that multiple transfusions will tide a patient over the acute phase of the disease and put him in condition for operation. However, it is difficult to evaluate these cases since we know that many patients with thrombocytopenic purpura have spontaneous remissions, and good controls are difficult to obtain. My own feeling in the matter is that there is only one treatment for thrombocytopenic purpura, and that is splenectomy. Why this should be effective we don't know. Troland and Lee thought they could demonstrate a platelet depressing agent in the spleens removed from patients with thrombocytopenic purpura, but I do not think that has been substantiated. Meyer and Pohle, of Wisconsin, could not confirm these observations, and it is impossible to say whether the disease is due to faulty formation of platelets or to increased destruction. We certainly find in the bone marrow of these patients pictures of both sorts, in some an apparent increase of megakaryocytes and in others a marked decrease.

As far as operation is concerned, the most important thing is the choice of the surgeon. Here we have operated on fourteen or fifteen patients with thrombocytopenic purpura when we were sure of the diagnosis and thus far we have had no deaths. When the surgeon clamps off the pedicle of the spleen something happens; it is striking to see all the oozing stop within less than a minute. This treatment is safe if the procedure is carried out rapidly and transfusions are available. Excellent results are being obtained in other centers. It would seem wiser to operate early in these cases than to pursue a policy of watchful waiting and run the danger of a death from cerebral or other hemorrhage.

Our experience shows that some patients do not retain the high platelet count that they have just after the operation. We have had some patients with platelet counts that are down to 30,000 again, but I do not think any of them have had a recurrence of bleeding. It has been reported in some series that 30 per cent of these patients have recurrence of thrombocytopenic purpura, and many of them subsequently die. We have not seen that in our cases.

THERAPEUTIC ASPECTS OF HEMORRHAGIC DISEASES IN INFANCY AND CHILDHOOD

DR. FORKNER: Dr. Schloss, will you discuss the therapeutic aspects of hemorrhagic diseases in infancy and childhood?

DR. OSCAR M. SCHLOSS: Practically the only hemorrhagic condition peculiar to early life is the so-called hemorrhagic disease of the newborn.

During the first few days of life, usually from the second to the fifth, the newborn infant may develop spontaneous hemorrhage. There is great irregularity in the source of the bleeding and its severity. It may originate in the skin, subcutaneous tissues, viscera, serous membranes or cranial cavity. Often the degree of hemorrhage is slight and the bleeding may cease spontaneously within a short time. At the other extreme, death from exsanguination may occur within a few hours.

Up to now no definite or uniform cause of hemorrhage in the newborn has been established. Many investigations of the platelet count, bleeding time, clotting time and other factors involved in hemorrhagic disease have given inconstant results. Occasional cases have been observed in which there was a thrombocytopenic picture or in which blood clotting was greatly delayed, but often all such investigations have thrown no light on the cause of hemorrhage.

The best treatment is the administration of human blood. Whole blood may be given by intramuscular injection, but unquestionably transfusion is the method of choice. Transfusions of about 10 cc. of blood per kilogram of body weight are usually adequate and may be repeated in from one to three days if indicated.

Transfusions serve two purposes: (1) the replacement of lost blood and (2) the relief of the tendency to bleed. Citrated blood always fulfils the first requirement and usually both, but occasionally it is necessary to give unmodified blood by direct transfusion to control the bleeding tendency effectively.

Within the last few years, evidence has accumulated which indicates that vitamin K deficiency may be a factor in some cases of spontaneous hemorrhage in the newborn. It has been noted by Owen, Hoffman, Ziffern and Smith, Hellman and Shettles, Moore and Javert and others that in the newborn prothrombin has only from 14 to 39 per cent of the values found in adults. More important are the observations that the prothrombin falls to an even lower level sometime between the second and seventh days of life, the period during which hemorrhage is most apt to occur. Thus far, a few cases have been reported by Quick, Dam, Waddell and Guerry and others in which abnormally low prothrombin of bleeding infants was raised to normal by the administration of vitamin K, with coincident cessation of bleeding. Much further evidence is necessary to clarify the possible relationship of vitamin K deficiency to hemorrhagic disease in the newborn. Such evidence should be forthcoming soon, as the subject is being actively investigated in a number of clinics.

If it is demonstrated that vitamin K deficiency is the usual or even a common cause of bleeding in the newborn, prophylactic treatment will probably become universal. Hellman and Shettles have shown that the administration of large doses of vitamin K to the mother, even shortly before the infant is born, can raise the infants' prothrombin to three times the average value.

Meanwhile the administration of vitamin K or an effective chemical substitute (2-methyl-1,4-naphthoquinone) in addition to blood transfusions would seem a rational procedure. It would naturally be best to do this under the guidance of prothrombin time determinations, but even if this is not possible vitamin K may be given empirically in all cases of severe or persistent hemorrhage.

VITAMIN K

DR. FORKNER: I think that it might be well now, as the subject of vitamin K has been brought up and is so important, to ask Dr. Andrus and Dr. Chambers to say a few words about their work with it. We would like to hear from Dr. Andrus with regard to the control of hemorrhage in surgical conditions by means of vitamin K, and something about the chemistry and physiology of vitamin K from Dr. Chambers.

DR. WILLIAM DEW. ANDRUS: The conditions for which we use vitamin K therapy in surgery are particularly the hemorrhagic tendency in jaundice and the similar tendency which may occur in the presence of severe liver disease. I think it is now pretty well accepted that any patient with a plasma prothrombin level below 60 points on the Smith scale or 70 points by the Quick test should receive vitamin K. Prothrombin deficiencies are much more widespread than one would think but usually are not of such severity as to be critical. However, after surgical operations and after hemorrhage the body and compensatory mechanism for maintaining blood volume may dilute the prothrombin to a critical point. We have evidence that in patients who, because of gastric ulcer or carcinoma, have been on a markedly deficient diet before operation, the operation itself may depress the prothrombin still further, and this plus an inadequate vitamin intake following the operation may cause the prothrombin level to fall below the point at which hemorrhage occurs.

As far as the actual therapy is concerned, several methods can be used. Vitamin K can be given by mouth with bile salts if the latter are not present in the gastrointestinal tract, but I think that the method which will come to be used from now on is the administration either by mouth with bile salts, if necessary, or hypodermically of synthetic naphtha quinone derivatives, either the 2-methyl-1,4-naphthoquinone of Ansbacher or the compound which Fieser has brought out, which contains a phytyl group in addition. This substance is tremendously potent so far as its prothrombin forming activity is concerned. We have patients in whom the injection of 1 mg. of 2-methyl-1,4-naphthoquinone has elevated the plasma prothrombin by 50 points and has maintained it at a high level for a period of several days. In a newborn child 0.5 mg. produces a corresponding rise. One mg. in a dog will elevate the plasma prothrombin level as much as 50 points and keep it elevated for two weeks. Furthermore, there is a wide gap between the therapeutic and the toxic dose of this material. It requires something on the order of 2 mg. per kilogram to produce toxic effects in animals, and a total dose of 1 mg. a day in an adult is entirely adequate. The substance can be injected in corn oil for

slow absorption, or the dipropionate can be injected in twice the amount, that is 2 mg. subcutaneously. We have done microscopic studies in animals of the muscle into which injections of these substances have been given and we find no untoward reaction. A very comforting point is the fact that no matter how much vitamin K is given subcutaneously, orally or even intravenously, the prothrombin can never be forced above 100 per cent of normal by that method alone.

DR. FORKNER: Dr. Chambers, may we have a word about the chemistry of vitamin K?

DR. WILLIAM H. CHAMBERS: Vitamin K was first prepared in highly purified form as a yellow oil extracted from alfalfa or other green plant materials. Work on purification of crystalline material progressed very rapidly in several laboratories early in 1939. In the July issue of the *Journal of the American Chemical Society* four laboratories agreed essentially on a naphthoquinone structure with a phytyl (C_{20}) side chain. The four groups are Almquist and Klose; Doisy, Thayer, MacCorquodale and their co-workers; Riegel, Fieser and their co-workers, and Ansbacher and Fernholz. Recent synthesis has shown that the chemical structure of vitamin K_1 derived from alfalfa is a 2-methyl-3-phytyl-1,4-naphthoquinone. The phytyl group is not necessary for the antihemorrhagic activity.

Decomposed fish meal yields a substance with a somewhat different structure, which has been labeled vitamin K_2 by the St. Louis group.

DR. FORKNER: Will you tell us something of the relationship of vitamin K to liver function?

DR. CHAMBERS: The low prothrombin content of the blood in vitamin K deficiency may be due to several causes, as outlined by Snell and Butt in recent Council reports published in THE JOURNAL. In the test chicken and other animals the avitaminosis is produced by a vitamin K deficient diet. This condition may also be found clinically. Since it is a lipoid material, absorption of the vitamin is helped by bile salts. The jaundiced patient suffers from lack of adequate absorption.

The fall in blood prothrombin after liver damage by chloroform or partial or complete hepatectomy points to the liver as the source of prothrombin. Some cases with severe liver damage have been reported which would not respond to vitamin K therapy.

PARENTERAL USE OF THE GLOBULIN FRACTION

DR. REZNIKOFF: I should like to ask Dr. Patek whether he would tell us something about the present status of the globulin fraction in the treatment of hemophilia, that is, the parenteral use of the globulin fraction.

DR. PATEK: The term globulin fraction, or substance, of necessity is vague because its chemical nature is not yet known. It simply means that the material effective for the clotting of hemophilic blood is obtained from normal plasma with the globulin fraction. It has been shown that the effective substance is neither prothrombin nor fibrinogen. In the treatment of hemophilia I see no advantage in the use of globulin substance over transfusion with blood, because the material is derived from human blood and there must obviously be some loss in its preparation. If a store of the dried powder were available, and if no transfusion were within reach, I think it would be serviceable for an emergency.

In the earlier studies with Dr. Taylor, I found that a clot accelerating substance was obtained either by dialysis or by acid precipitation of diluted plasma. We used the latter method for subsequent studies because it was easier to prepare. Unfortunately we assumed the substances obtained by either method to be the same. Later, Pohle and Taylor demonstrated that a refractory phase developed in the response of the hemophiliac to globulin substance when injections were repeated at frequent intervals, say six hours apart, but that this did not happen when the injections were spaced at twenty-four hour intervals. What takes place in the acid precipitation method to bring about this effect I don't know. I wish that you could help explain it. However, recently Lozner and Taylor showed that the refractory phase did not occur when the injected material was prepared by the method of dialysis. In other words, globulin substance prepared in this manner behaves in its clot accelerating power like the parent plasma.

DR. HARRY GOLD: Is it possible to say that blood given intramuscularly is not as effective as a transfusion for the control of hemorrhage in hemophilia?

DR. PATEK: I have not had experience enough to say. It causes considerable discomfort. I suppose that you could give 30 or 40 cc. intragluteally by injecting 15 or 20 cc. in each buttock, but you could not do it repeatedly and have a grateful patient.

DR. FORKNER: The question of intramuscular injection of blood comes up occasionally, as with a patient who has a very severe hemorrhage for whom there is not time to prepare for a transfusion, and one wonders whether or not an injection of 15 or 20 cc. of blood might not control a hemorrhage. I think it is a good thing to do. It might occasionally save the patient's life, and of course one does not have to group the blood before making an intramuscular injection. Anybody's blood would be all right.

DR. GOLD: Are any of the tissue extracts on the market that are recommended for intravenous or systemic administration for the control of hemorrhage of any value in the bleeding of hemophilia, such as Tissue Fibrinogen of Merrell? They were at one time exploited actively, and some outstanding men at that time seemed to think that our problems were over. All we had to do was to give a dose of tissue fibrinogen intravenously, and lo and behold!

DR. PATEK: I have not used those either, so I am not qualified to say. I think the fact that they have not survived in popular use is evidence against them. The most promising of those measures has been the placental extract of Eley and his associates, which in certain instances undoubtedly was effective. However, results with this preparation have been inconstant. It may be that with refinement either in the method of preparation or in the mode of administration this may prove to be useful. It is based on the same principle as the lung extracts of Mills and others that you mentioned.

DR. FORKNER: With regard to tissue extracts of various sorts, and I think Dr. Reznikoff will agree with me, almost all of those which have heretofore been prepared for commercial sale are practically useless in the control of thrombocytopenic purpura, hemorrhagic disease of the newborn or hemophilia.

DISCUSSION OF QUESTIONS

STUDENT: How long does the effect of a transfusion last in a case of hemophilia?

DR. PATEK: It is a question of what you mean by effect. The clinical effect, as far as the arrest of bleed-

ing is concerned, may last twelve hours or so. It is variable from patient to patient. To illustrate with a specific example, let us suppose that the initial clotting time of a patient is 150 minutes. After transfusion the clotting time may be reduced abruptly to eight minutes. In the course of twelve hours the clotting time may increase to twenty-five or thirty minutes, which may be the level or threshold at which bleeding occurs in this case. In the subsequent twelve or twenty-four hours the clotting time may return to the original value of 150 minutes.

DR. FORKNER: Dr. Patek, you mentioned transfusion of 100 cc. of blood being as effective in inducing an immediate result as 500 cc. Could one carry that still further and say that 10 cc. of normal blood will be as effective?

DR. PATEK: I have not quantitated it to that extent; 30 and 40 cc. was as effective in my hands as 500 cc.

DR. REZNIKOFF: It is rather surprising that nobody in discussing hemorrhagic states so far has mentioned any of the snake venoms. I wonder if anybody would like to tell us the status of those products.

DR. FORKNER: Would anybody like to discuss snake venoms? Will you say a word about them, Dr. Reznikoff?

DR. REZNIKOFF: I think there is little to be said in their favor. The only experience we have had has been with moccasin venom and the so-called fer-de-lance. Moccasin venom has given us no results at all, but the fer-de-lance has given us results when applied locally. For instance, with bleeding gums in acute leukemia or uremia, if we apply it locally in some cases we apparently do stop the bleeding. We had one patient who had capillary hemorrhages and bled profusely postoperatively. We sprayed the fer-de-lance preparation and the bleeding stopped.

DR. FORKNER: I think many mistaken reports which have appeared about the effectiveness of various agents in hemophilia and hemorrhagic disease have their source in an inadequate knowledge of the natural history of the disease. Frequently it happens that when a patient bleeds he tends to control his own hemorrhage; and the hemophilic patient who bleeds, whether into his own tissues or externally, is apt to lower his own coagulation time so that any therapeutic agent given at that time will tend to make one think that he is obtaining a therapeutic effect.

VISITOR: It should be borne in mind that the use of certain drugs, for example quinine, may cause acute thrombocytopenic purpura. In these cases it is only necessary to stop their use to stop the bleeding and cure the purpura.

DR. FORKNER: I think the point which has just been brought out should be emphasized. We are trying to remove the cause, where possible, of the various disorders. One frequently thinks of treating the disease without attention to the cause, when it is apparent that, particularly in thrombocytopenic purpura, it is the cause that must be removed.

DR. GOLD: I am struck by the difference in the opinions regarding snake venom in two institutions that are removed from each other by only a few blocks. Since 1931 several papers have appeared on the use of snake venom or moccasin venom in the treatment of various types of hemorrhage. Its introduction for the treatment of thrombocytopenic purpura was based on the interesting observation that snake venom prevents the Shwartzman reaction, which suggested an increased resistance of the small blood vessels. It has been tried in various types of hemorrhage, in thrombocytopenic purpura, in ordinary uterine hemorrhage and in others of that sort. Reports indicate improvement in a large proportion of cases treated. But here we are; we learn that the experience in this institution fails to confirm it. This seems to be the way with agents introduced for the control of hemorrhage.

DR. MCKEEN CATTELL: I should like to go back to vitamin K and ask what the group here thinks about Quick's suggestion that hemorrhagic disease in infancy may be related to the failure of the digestive processes to provide vitamin K until after the bacterial flora has been developed.

DR. SCHLOSS: Quick observed that the prothrombin of newborn infants fell from the second to the sixth day and then rose to normal. He suggested that this secondary rise was caused by the production of vitamin K by the bacteria of the intestinal tract.

DR. ANDRUS: Ordinarily the prothrombin content of a child's blood does not reach adult values until the age of 6 months or the end of the first year, although I think the flora of the stool begins to form before that time, does it not?

DR. SCHLOSS: It begins to form as soon as food is taken. What actually happens is that the secondary rise brings the prothrombin to the previous newborn level, which is about 30 per cent of the normal adult level as determined by most methods in use at present. By Quick's method, however, blood of the newborn infant contains practically as much prothrombin as blood of the adult.

STUDENT: I understand that in one clinic intramuscular injections of the patient's own blood are given; i. e., they draw it from the vein and reinject it.

DR. FORKNER: In hemophilia?

STUDENT: Not only in hemophilia; I heard of a case of bleeding due to uremia in which that was done, but I am not clear why.

DR. FORKNER: I think the explanation for that is that an intramuscular injection of blood may act in much the same way as a hemorrhage does, in that the individual interprets it as a hemorrhage and mobilizes his forces against it and in that way reduces his own coagulation time. Have you anything to say about that, Dr. Reznikoff?

DR. REZNIKOFF: There exists the possibility that in the blood clot there is formed a degradation product similar to the substance which Dr. Patek discussed.

DR. GOLD: Is there any experience with parathyroid extract in the treatment of hemophilia?

DR. PATEK: I don't know of any. Calcium salts of course have been tried.

DR. CHARLES O. WARREN: In what type of jaundice is vitamin K treatment indicated? Can you tell without determining the prothrombin value in the blood?

DR. ANDRUS: No, you cannot tell, for it depends on several factors. Of course, in hemolytic jaundice it is not indicated at all. It is indicated for vitamin K starvation, inadequate vitamin K absorption or inability on the part of the liver to form prothrombin. We now have the cycle of prothrombin pretty well worked out. It is influenced in its formation by vitamin K. Whether the vitamin K as such is actually the precursor or not is a question, but prothrombin is apparently formed continuously in the liver, and by inference only in the liver, because if one performs complete hepatectomy in

a dog one gets a drop of 50 per cent in the plasma prothrombin level in the first three hours and then a gradual fall to practically 0 in fourteen hours. This is not caused by shock and is not caused by operations of similar magnitude. Further, the curve of fall in the plasma prothrombin level after hepatectomy is not altered by the availability of even massive quantities of vitamin K at the time of operation. The mere availability of the vitamin will not elevate the plasma prothrombin if the liver function is seriously deranged.

In looking for differences in prothrombin content between arterial and venous blood, we find there is an average of 11 per cent and extremes of from 4 to 19 per cent difference between the blood in the right and in the left side of the heart. The incidence and extent of this difference correspond exactly to the difference in the platelet counts in the heart's blood of the right and left sides as shown by Howell and Donahue. The cycle of prothrombin would therefore seem to be that it is formed in the liver under the influence at least of vitamin K, or of the naphtha quinone group, being continuously formed here and apparently only there because it falls so rapidly after hepatectomy. It is destroyed at the rate of about twice the total circulating prothrombin every twenty-four hours, and this destruction or neutralization takes place possibly through the thromboplastic activity of the platelets and therefore appears most markedly in the pulmonary veins, where the platelet count is materially above what it is elsewhere.

SUMMARY

DR. FORKNER: The exact mechanism of the cause of bleeding in hemophilia is still unknown. The prolonged clotting time is restored to and maintained at normal values by repeated transfusions of 50 or 100 cc. of blood. For the control of bleeding in accessible parts the local application of "globulin substance," preferably in powdered form, may be effective. Bleeding into joints may be treated by limitation of activity, by salicylates and by transfusions of blood. Patients with hemophilia should lead a guarded life. Potential carriers of hemophilia should not reproduce.

Splenectomy preceded and followed by transfusions of blood produces dramatic and usually permanent cessation of the bleeding tendency in acute or chronic idiopathic thrombocytopenic purpura.

Hemorrhagic disease of the newborn may be associated with decreased prothrombin content of the blood. Evidence is accumulating that administration of vitamin K to the infant or even to the pregnant mother will overcome this defect. At present this disease is best treated by transfusion of 10 cc. of blood per kilogram of body weight repeated after two or three days.

The hemorrhagic tendency associated with some types of jaundice has been shown to be related to decreased prothrombin in the blood. This decrease may be due to inability of the liver to form prothrombin or deficiency of vitamin K. In the absence of bile salts the absorption of this vitamin is greatly inhibited. The administration by mouth of vitamin K or of 2 methyl 1-4 naphthoquinone together with bile salts restores the prothrombin and causes bleeding to cease. The 2 methyl 1-4 naphthoquinone may be effectively administered parenterally in doses of 1 mg. daily. Such medication should be guided by repeated observations of the prothrombin content of the blood.

Sufficient time was not available to discuss nonthrombocytopenic purpura and the bleeding tendency in leukemia and erythremia and in other rarer disorders.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS. HOWARD A. CARTER, Secretary.

ACOUSTICON HEARING AIDS GOLD MEDAL MODELS ACCEPTABLE

Manufacturer: Dictograph Products Company, Inc., 580 Fifth Avenue, New York.

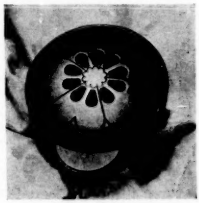
The Acousticon, Gold Medal Models, GM-1 and GM-2, are wearable hearing aids adaptable to use with bone or air conduction. The Council's report is based on investigation of the following:

One GM-1 Microphone serial number 4357, weight 58 Gm.
One GM-2 Microphone serial number 03486, weight 81 Gm.
One number 1 Midget air conduction receiver with right and left ear pieces, weight 11.5 Gm.
Two S-2 Gm. amplifiers.
One "One dot" bone conduction receiver, weight 18 Gm.
One number 9 3 volt dry battery, weight 250 Gm.
One number 6 4½ volt dry battery, weight 187 Gm.

Battery Consumption.—The current drains of the various combinations are:

GM-1 Microphone, any receiver, 3 volt battery, 35-55 milliamperes.
GM-1 Microphone, any receiver, 4½ volt battery, 55-120 milliamperes.
GM-2 Microphone, any receiver, 3 volt battery, 20-55 milliamperes.
GM-2 Microphone, any receiver, 4½ volts, 60-100 milliamperes.

Internal Noise.—The internal noise in this instrument under conditions of use, or with the microphone attached to the clothing of the wearer, is of the order of 20 decibels above the normal threshold. With the microphone turned full on there is a tendency for the instrument to feed back with the air conduction receiver, thus limiting the range of full amplification. With the number 1 receiver and fitted ear piece the microphone may be used up to about three-fourths full volume without feed back difficulties. There is no feed back difficulty with any combination using the bone conduction receiver.



Acousticon Hearing Aids, Gold Medal Model.

Amplification.—All the combinations tried show enhanced amplification in the range of 1,000 to 2,000 cycles. The results in table 1 are fairly typical of measurements made with two hard of hearing subjects.

TABLE 1.—*Amplification*

Microphone	Receiver	Battery	Amplification in Decibels 128	256	512	1,024	2,048	4,096
GM-1	#1	#6 4½ volts	4	4	10	22	24	None

Articulation Tests.—Typical of the best results of articulation tests made with various combinations using hard of hearing subjects and standard articulation tests are those given in table 2.

TALE 2.—*Articulation*

Microphone	Receiver	Battery	Syllable Articulation Per Cent	Sentence Intelligibility Per Cent
GM-1	#1	#9 (3 volts)	64	88
GM-2	Bone	#6 (4½ volts)	68	90

The instrument is pleasing in appearance and all parts are mechanically well made.

The Council on Physical Therapy voted to accept the Acousticon Hearing Aids, Gold Medal Models, GM-1 and GM-2, for inclusion on its list of accepted devices.

DeVILBISS SPRAYERS, ATOMIZERS, VAPORIZERS ACCEPTABLE

Manufacturer: The DeVilbiss Company, Toledo, Ohio.

The following DeVilbiss devices have been investigated by the Council:

Atlas No. 32 powder blower. Of three-piece glass and metal construction; economically fabricated. The glass bottle, when one-half full, contained 25 cc. Eighty mesh powder consisting of equal parts of aluminum oxide and silicic acid was carried 10 inches from the nozzle and spread through an angle of 15 degrees.

DeVilbiss No. 288 powder blower. Consists of a hard rubber nozzle, tube and 30 cc. glass bottle. Ejects a powerful stream of 80 mesh powder for a distance of 15 inches through an angle of 25 degrees.

DeVilbiss No. 252 powder blower. Consists of a hard rubber nozzle and 15 cc. glass bottle with rubber bulb. Eighty mesh powder was ejected over an angle of 25 degrees for 15 inches.

DeVilbiss No. 260 atomizer for tannic acid. Consists of a metal cap with short nozzle, rubber bulb and glass bottle marked for 75 cc. of 10 per cent acid and water sufficient to make 160 cc. A small volume of water, in large globules, was injected over an area 3 inches in diameter from a distance of 10 inches.

DeVilbiss No. 177 syringe. Pressure instrument, with release vent, consisting of a 150 cc. glass bottle and long, slim metal nozzle ejecting a continuous fine stream of liquid.

DeVilbiss No. 286 power atomizer. Consists of hard rubber nozzle and tube with a 30 cc. glass bottle. The large volume of aqueous spray consisted of mixed large and small globules, concentrated toward the center; at 5 inches an area 2 inches in diameter was covered and at 10 inches a 3½ inch diameter was covered.

DeVilbiss No. 287 power atomizer. Similar to No. 286 except that there was an upturned extension on the nozzle. The spray contained both fine and course droplets and covered a 2 inch area at 5 inches distance and 3½ inches at 10 inches.

DeVilbiss No. 151 power atomizer. Consists of a long, slim metal nozzle and glass bottle of 30 cc. capacity. A small volume of very fine evenly distributed spray was ejected. At a distance of 5 inches an area 1½ inches in diameter was covered, and at 10 inches a 2 inch diameter was covered.

DeVilbiss No. 43 glass nebulizer. A one-piece 10 drop size instrument of glass with a rubber bulb. It yielded a very fine mist which carried for 6 inches.

DeVilbiss No. 40 glass nebulizer. A one-piece, 20 drop size instrument of glass with a rubber bulb. It yielded a very fine mist which carried for 4 or 6 inches as determined by an opening in the bulb which regulated the air intake.

DeVilbiss No. 12 adjustable tip atomizer. Consists of an adjustable metal nozzle, 15 cc. bottle and rubber bulb. The spray was fine and small in volume, covering an area 3 inches in diameter at 5 inches and 5 inches in diameter at 10 inches.

DeVilbiss No. 19 adjustable tip atomizer. Consists of a rotating, self-closing metal nozzle, 15 cc. glass bottle and attached rubber bulb. The fine aqueous spray covered an area 3 inches in diameter at 5 inches distance and 5 inches in diameter at 10 inches. Using liquid petrolatum, the spray covered an area 2½ inches in diameter at 5 inches distance.

DeVilbiss No. 27 adjustable tip atomizer. Consists of a metal nozzle with attached rubber bulb and 15 cc. glass bottle. The aqueous and oily sprays were similar to those from No. 19.

DeVilbiss No. 251 hard rubber atomizer. Consists of a hard rubber nozzle, rubber bulb and 15 cc. glass bottle. A large amount of an aqueous medium was ejected in varying sized droplets. The area covered by the spray at 5 inches distance was 2 inches in diameter and at 10 inches was 3½ inches.

DeVilbiss No. 170 surgeon's atomizer. Intended for alcoholic solutions and consisted of a long metal nozzle and 185 cc. glass bottle. It yielded a fine, dense spray which covered an area 3 inches in diameter at 5 inches distance and 5 inches in diameter at 10 inches.

Atlas No. 112 electric steam vaporizer. Operates on the principle that steam generated by a submerged electric heater, when passed over cotton containing a volatile oil, will carry off some of the oil. It consisted of a 200 cc. glass jar in a metal frame covered by a metal cap to which was attached a fire clay-enclosed heating element and spout. The metal parts were found to rust easily. The heating element took thirty minutes to raise the temperature of 120 cc. of water from 25 C. to 100 C. After boiling started, steam was steadily generated.

The Council voted to accept the DeVilbiss Devices Nos. 12, 19, 27, 32, 40, 43, 112, 151, 170, 177, 251, 252, 260, 286, 287 and 288 for inclusion on its list of accepted devices.

Council on Pharmacy and Chemistry

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.

PAUL NICHOLAS LEECH, Secretary.

RESYL-CIBA NOT ACCEPTABLE FOR N. N. R.

Resyl-Ciba is a guaiacol compound claimed to be glyceroguiacol-ether which has been extensively promoted by Ciba Pharmaceutical Products, Inc. In view of the firm's active campaign of advertising propaganda, the Secretary of the Council asked the firm if it cared to present its product for the Council's consideration. This the firm did in the usual manner, submitting with its presentation a number of advertising circulars.

The Council omitted from New and Nonofficial Remedies all creosote and guaiacol compounds because, after a thoroughgoing and painstaking inquiry, it was found that evidence is lacking to show that this group of compounds is a necessary part of the modern therapeutic armamentarium (THE JOURNAL, Jan. 15, 1938, p. 209). In its examination of the advertising submitted by Ciba Pharmaceutical Products, Inc., the Council found it replete with therapeutic claims which, in view of the Council's investigation referred to, must be held to be unwarranted. For example, the use of Resyl has been proposed in a large number of conditions such as diseases of the respiratory organs, cough, acute and chronic bronchitis, tracheitis, pharyngitis, laryngitis, whooping cough, influenza, measles, tuberculosis and other febrile conditions associated with catarrhal disorders. The product has been claimed to reduce bronchial secretion and facilitate expectoration; however, no attention is called to the fact that it is often necessary to increase secretion in order to facilitate expectoration. No acceptable evidence is offered to support the claim that Resyl-Ciba possesses "all the therapeutic properties of creosote and guaiacol without their disadvantages."

In view of its previous action, and of the nature of the advertising propaganda for Resyl-Ciba, the Council declared the product unacceptable for inclusion in New and Nonofficial Remedies because of unwarranted therapeutic claims.

When the report was transmitted to Ciba Pharmaceutical Products, Inc., the firm replied with various suggestions for revision and with the statement that the advertising was prepared prior to the Council's publication of its revaluation of creosote guaiacol preparations. The firm added that revision of the claims will be made in the next edition of the advertising. The fact remains, however, that the present evidence available serves to show that creosote and guaiacol have no place in the modern materia medica.

Recently E. J. Fellows (*Am. J. M. Sc.* **197**:683 [May] 1939) has confirmed the Council's opinion of the lack of pharmacologic rationale for the use of calcium creosotate in pulmonary disorders by a controlled investigation of the phenol content and volume of the sputum in a total of fifty-six cases of pulmonary tuberculosis. Tuberculous patients of similar degrees of lung change were selected because such cases provide reliable controls in which more constant daily sputum output is produced than in most bronchial diseases. In spite of adequate absorption as revealed by measurement of the volatile phenols in the urine of patients receiving the highest oral doses of the drug, no significant change in either the sputum phenols or sputum volumes was observed in any of the cases during the period of calcium creosotate administration. This study not only contradicts claims that creosote compounds increase expectoration but also invalidates the alleged thesis that any appreciable phenol concentration in the lungs is produced.

Council on Foods

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.

FRANKLIN C. BING, Secretary.

ANNUAL MEETING OF THE COUNCIL ON FOODS, 1940

The annual meeting of the Council on Foods was held at the Association headquarters on March 7 and was attended by the following members:

Dr. Franklin C. Bing	Dr. Lydia J. Roberts
Dr. George R. Cowgill	Dr. Mary Swartz Rose
Dr. Morris Fishbein	Dr. Tom D. Spies
Dr. Philip C. Jeans	Dr. Russell M. Wilder
Mr. Culver S. Ladd	Dr. Arild E. Hansen (proxy for Dr. Irvine McQuarrie)
Dr. Howard B. Lewis	
Dr. James S. McLester	

Several invited guests were also present, including the following members of the Council on Pharmacy and Chemistry:

Dr. H. N. Cole	Dr. E. M. Nelson
Dr. P. N. Leech	Dr. W. W. Palmer

Dr. Fishbein requested that he be relieved of the chairmanship of the Council in order to permit him to devote more time to other activities. Drs. McLester and Lewis were elected Chairman and Vice Chairman of the Council respectively.

Among the topics which were given consideration at the meeting, the following items may be of interest to physicians, manufacturers and others.

Scope of the Council's Activities.—When the Council was first organized in 1929 there was need for a body of experts to express authoritative group opinion about health claims made in the advertising of food products. The Council devised a seal by which manufacturers could make known that they had accepted the Council's requirements for restriction of advertising claims to those which were considered established. It also has been a requirement of the Council that the nature and amount of each ingredient of processed foods be made known and that there be on labels for such foods a complete declaration of ingredients in the order of their decreasing proportion.

The new Food, Drug and Cosmetic Act includes provisions for the more precise labeling of processed foods. Definitions and standards of various classes of foods are being developed. No longer are the provisions of the Council regarding declaration of ingredients of compounded foods so necessary, now that governmental agencies are empowered to deal more adequately with this problem. Further, the Federal Trade Commission has had broad powers conferred on it by reason of the Wheeler-Lea Amendment. This agency now has greater authority to police objectionable claims in advertising. There no longer should exist a need for detailed examination by the Council of much advertising material, although the demand for the Council to provide an authoritative opinion on questions pertaining to foods and health still remains. For these reasons it would seem proper for the Council to consider a revision of its policies to permit the relinquishment of certain functions and the expansion of others.

The Committee on Scope of the Council was charged with the duty of developing a plan whereby the number of food products considered for acceptance might be considerably reduced. Attention should continue to be paid to individual products intended for infant feeding, special foods for feeding the sick, and foods which have been manipulated in such a way as to enhance their nutritional properties, by the addition of preparations of vitamins, minerals or other dietary essentials. It would be well to devote more attention to nutritional claims and interpretations of laboratory and clinical reports on the nutritive properties of foods and diets.

Action was deferred on these questions until after a thorough study could be made of the manner by which the Council might utilize its resources to the fullest possible extent.

Publications.—The book Accepted Foods and Their Nutritional Significance has been well received. The book was intended to provide in readily accessible form authoritative information about commercial foods, and it is gratifying to note that this purpose seems to have been achieved. Plans were discussed for revision of the book and improvements in the material which it contains, with a view of keeping the volume up to date and having it represent the opinion of the Council on matters of nutritional importance.

The first printing of the Symposium on The Vitamins, published under the joint sponsorship of the Council on Foods and the Council on Pharmacy and Chemistry, has been entirely disposed of. It was voted to authorize the printing of an additional number of copies to meet the anticipated demand for one year, after which the question of the preparation of a new series of articles would be given consideration.

Fortification of Foods with Minerals and Vitamins.—There has been published in the 1939 report of the Council a statement of general policy adopted by the Council with regard to the fortification or restoration of foods with vitamins, minerals and other dietary essentials. As far as general purpose foods are concerned, it was decided that, with few exceptions, fortification of these products could well be restricted to the restorative addition of important nutritional essentials for which a greater intake is considered to be in the interest of public health. In this way processed foods would be brought up to the original high nutritive level of unprocessed foods. A number of specific problems have been presented for the Council's consideration in connection with this rational process of improving the nutritive quality of foods. Breakfast cereal products are usually divided into two classes, the ready-to-eat variety and those which are eaten after cooking. The cereal product having the highest vitamin B_1 content appears to be oatmeal, which may provide as much as 300 international units of vitamin B_1 to each hundred grams of dry material. Whole wheat contains on the average about 165 international units of vitamin B_1 per hundred grams. Most breakfast cereal foods contain considerably less vitamin B_1 than either whole wheat or oatmeal. It was decided that the addition to breakfast cereals of vitamin B_1, in the form of thiamine hydrochloride, up to the level of oatmeal would be in agreement with the Council's previously declared policy. This permits the restorative addition of vitamin B_1 to these products so that they may contain up to 300 units of vitamin B_1 per hundred grams, or 80 units per hundred calories.

While whole grain cereal products are usually considered to be of nutritional value because of the vitamin B_1 (and iron) which they contain, they also provide calories, protein and certain other members of the vitamin B complex. It was decided that no objection would be taken to the restorative addition of substances rich in riboflavin to processed cereal foods. Claims must be restricted to statements of fact, however, such as "this product has been enriched with riboflavin to the value of whole wheat," or the like, because the principal dietary sources of riboflavin are milk and meats, and not cereals, even of the whole grain variety.

The foregoing decisions refer to general purpose foods, which means foods which are ordinarily considered to be useful for any member of a family. Another type of product, the so-called special purpose food, is designed and represented for special dietary use. Items in this class are foods specially treated to make them of value in the diets of infants or invalids, or foods which are designed to provide a convenient, rich source of one or more dietary essentials. The Council requires that the intended dietary use of such special products be mentioned on the label and that the contribution which the product makes to the diet likewise be declared. With respect to the permissible vitamin (or mineral) content of such products, the Council decided that each product would need consideration on its own merits and no limit would be placed on the extent of fortification up to what is considered to be the normal nutritional requirement for a healthy person.

Dietary Advice.—A great deal of advertising for food products partakes of the nature of dietary advice to the general public. There are pamphlets, for example, on how to select foods in order to be provided with what experts in nutrition consider to be the essential components of an adequate diet. Motion pictures likewise have been prepared which purport to convey authoritative advice for the public. Much of the commercial material that has been brought to the attention of the

Council is not as educational as it might well be. This is particularly true of material which has been prepared with the seeming intent of increasing the consumption of some particular food. For example, the increased use of bread and cake and other bakery products prepared from refined cereals and high in carbohydrate content has been urged. While these products are wholesome foods, the inclusion of large quantities of refined cereal products in the dietary requires extraordinarily careful planning of the other components of the diet in order that the essentials for adequate nutrition may be attained. The Council deplores the lack of sound information in much general advertising material which seemingly reaches a vast audience among the general public. It is gratifying to note some exceptions, in addition to material on which the Council's seal is permitted to be displayed. Two pamphlets in particular which appear to be quite commendable are "What to Eat and Why" and "Waistlines" published by the John Hancock Life Insurance Company.

There has been a tendency for manufacturers and distributors of foods to publish pamphlets embodying special dietary suggestions, particularly diet specifications for reducing purposes. These diets are prepared primarily to show how a particular food product may be included in a restricted ration for reducing weight. While small amounts of many foods, even those of high caloric value per unit weight such as fats, can be included in low-calory rations, it is usually difficult to formulate adequate diets which include significant amounts of foods that supply calories and little else. Of course, small amounts of fat have a flavor as well as a satiety value. They increase the palatability of vegetables. Even a slice of white bread may have some advantages in making a reducing diet more acceptable to the person using it. There is no objection to the preparation of simple directions for the preparation of special diets, but the work should be done by properly qualified persons and the diets suggested should be in accord with what authorities consider desirable. Prolonged use of inadequate diets of low calory value may result in great harm. It is usually necessary to select a caloric intake to fit the needs of the individual patient and to recommend supplements of vitamin-rich preparations or minerals or both in the amounts needed by the individual patient, in order to insure a diet satisfactory in regard to these nutritional essentials. Any person going on a prolonged reducing regimen should be under the care of a qualified physician. Firms which wish to write brochures on the principles of reducing would do well to emphasize these important facts.

The Council is opposed to slipshod methods of offering dietetic advice. The Council is opposed to advertising which overemphasizes the nutritional value of individual foods.

Vitamin D and Growth.—Consideration was given to recent evidence purporting to show that infants fed on milk containing 135 U. S. P. units of vitamin D to the quart, and no other dietary source of vitamin D, exhibit excellent growth. The referee analyzed the data provided in these published reports and called attention to the fact that the growth could be called excellent only if relatively poor standards of achievement were used for comparison. It is well known that vitamin D is a factor in growth. Evidence shows that milk which provides 400 U. S. P. units of vitamin D to the quart permits growth at an optimal rate, whereas milk containing 135 U. S. P. units to the quart does not. The referee emphasized the importance of continuing growth studies on babies over a considerable period of time. It is not so much the growth during the first six months of life as the growth from six months to one year that tells the story. The Council concurred in the referee's views, and the claim that 135 U. S. P. units of vitamin D to the quart yields a milk which produces excellent or optimal growth was considered not established.

Junior Foods.—During the last decade it has become customary to introduce finely chopped or strained foods into the diet of the infant at very early ages. The Council continually has emphasized that it is the function of a physician to decide at what particular age an individual baby is best given supplementary foods and in what quantities. Perhaps the most important value of feeding supplementary foods, such as strained fruits and vegetables, to young infants is the psychologic value of having the baby become accustomed to a variety of foods at an early age. If rightly done, this renders the problem of transferring the baby to the adult type of food much simpler. It is, after all, a fundamental principle of pediatric feeding to provide the young infant with foods he individually needs with the aim of preparing him for his place in the life of the family.

Strained foods are useful for a limited period, but their long continued use may defeat the main purpose of introducing them into the dietary of the infant. Chopped foods, or so-called junior foods, represent a transition food, likewise of value for a limited time. The Council has opposed any representations that chopped foods should be continued in the diet of a child beyond the age for which they are of particular value. Ordinarily this may be at about 1½ years, with variations depending on the individual child.

The term "junior food," which has been introduced for certain commercial preparations, is considered relatively unobjectionable, provided the claims are properly restricted and an appropriate explanatory statement accompanies the term on labels to indicate the age group for which the products are suited. Vignettes on labels for chopped foods or junior foods are not satisfactory, in the opinion of the Council, if they show children who are obviously older than 1½ years, because they are misleading. This can be corrected by stating prominently, in close proximity to the illustration of the older child, that the product in the can is intended for feeding infants in the range of about 8 to 18 months, depending on the physician's instructions.

ACCEPTED FOODS

THE FOLLOWING ADDITIONAL FOODS HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO ACCEPTED FOODS.

FRANKLIN C. BING, Secretary.

FATS AND OILS AND THEIR PRODUCTS (*See* Accepted Foods, 1939, p. 30).

The Cudahy Packing Company, Chicago.

PALM BRAND OLEOMARGARINE, containing coconut and cottonseed oils, cultured skimmed milk, salt, sodium monostearosulfoacetate as emulsifying agent and sodium benzoate.

Analysis (submitted by manufacturer).—Moisture 15.0%, total solids 85.0%, ash 2.7%, sodium chloride (NaCl) 2.6%, fat (ether extract) 81.4%, protein (N × 6.25) 0.4%, carbohydrates (by difference) 0.5%.

Calories.—7.36 per gram; 209 per ounce.

FRUIT JUICES INCLUDING TOMATO JUICE (*See* Accepted Foods, 1939, p. 48).

Rio Grande Valley Citrus Exchange, Weslaco, Texas.

TEXSUN BRAND GRAPEFRUIT JUICE, SWEETENED.

Analysis (submitted by manufacturer).—Moisture 86.7%, total solids 13.3%, ash 0.3%, fat (ether extract) 0.03%, protein (N × 6.25) 0.5%, reducing sugar 6.9%, sucrose 3.3%, crude fiber 0.01%, carbohydrates other than crude fiber (by difference) 12.5%.

Chemical titration (1938) showed an average of 0.38 mg. ascorbic acid per cubic centimeter of juice, or 760 international units per hundred cubic centimeters of juice.

Calories.—0.52 per gram; 15 per ounce.

TEXSUN BRAND GRAPEFRUIT AND ORANGE JUICE, SWEETENED, a mixture of grapefruit juice (75 per cent) and orange juice (25 per cent).

Analysis (submitted by manufacturer).—Moisture 86.9%, total solids 13.1%, ash 0.3%, fat (ether extract) 0.03%, protein (N × 6.25) 0.6%, crude fiber 0.01%, invert sugar 6.5%, sucrose 4.2%, carbohydrates other than crude fiber (by difference) 12.2%.

Chemical titration (1938) showed an average of 0.40 mg. of ascorbic acid per cubic centimeter of juice, or 800 international units per hundred cubic centimeters of juice.

Calories.—0.51 per gram; 14 per ounce.

PREPARATIONS USED IN THE FEEDING OF INFANTS (*See* Accepted Foods, 1939, p. 156).

Libby, McNeill & Libby, Chicago.

LIBBY'S BRAND HOMOGENIZED BABY FOODS FORMULATED COMBINATION NO. 10, containing tomato juice, carrots and peas.

Analysis (submitted by manufacturer).—Moisture 90.5%, total solids 9.5%, ash 1.1%, sodium chloride 0.2%, fat (ether extract) 0.1%, protein (N × 6.25) 2.2%, crude fiber 1.0%, carbohydrates other than crude fiber (by difference) 5.1%, calcium (Ca) 0.020%, phosphorus (P) 0.047%, iron (Fe) 0.0019%, copper (Cu) 0.00019%.

Report of titration test (1939) indicates that this product contains 0.026 mg. of ascorbic acid per gram, 0.73 per ounce. Protocols of biologic assay (1939) indicate that this product contains approximately 22.5 U. S. P. units of vitamin A per gram, 639 per ounce; and 0.33 Sherman-Bourquin unit of vitamin G (riboflavin) per gram, 9.4 units per ounce. Rat growth tests have demonstrated the presence of small amounts of vitamin B_1 (thiamin).

Calories.—0.30 per gram; 8.2 per ounce.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, JULY 20, 1940

THE PLATFORM OF THE AMERICAN MEDICAL ASSOCIATION

The American Medical Association advocates:

1. The establishment of an agency of the federal government under which shall be coordinated and administered all medical and health functions of the federal government exclusive of those of the Army and Navy.

2. The allotment of such funds as the Congress may make available to any state in actual need, for the prevention of disease, the promotion of health and the care of the sick on proof of such need.

3. The principle that the care of the public health and the provision of medical service to the sick is primarily a local responsibility.

4. The development of a mechanism for meeting the needs of expansion of preventive medical services with local determination of needs and local control of administration.

5. The extension of medical care for the indigent and the medically indigent with local determination of needs and local control of administration.

6. In the extension of medical services to all the people, the utmost utilization of qualified medical and hospital facilities already established.

7. The continued development of the private practice of medicine, subject to such changes as may be necessary to maintain the quality of medical services and to increase their availability.

8. Expansion of public health and medical services consistent with the American system of democracy.

NEW OPPORTUNITIES IN HEALTH BROADCASTING

The Federal Communications Commission has issued a ruling on so-called static-less frequency modulation broadcasting, which is designated by the Federal Security Administrator, Paul V. McNutt, as a development which may "provide the greatest stimulus to education our nation has yet experienced." According to a newspaper release [1] dated May 27, by the Federal Security Agency, the ruling of the Federal Communications Commission gives educational agencies the right to exclusive use of radio bands of ultra-high frequency which were opened up by the commission for the first time in 1938 to commercial broadcasting. More than 300 educational institutions, supported by the National Committee on Education by Radio, favored the proposal that these high frequency bands be assigned exclusively for educational broadcasts. The United States Commissioner of Education, John W. Studebaker, representing state departments of education and 300 educational organizations at the hearing, estimated that the decision would permit as many as 3,000 local broadcasting stations to be erected.

Stations which use radio bands of ultra-high frequency are said to be moderate in cost compared to conventional broadcasting stations. Educational institutions should be in a good position to provide adequate staffs for such stations by slight increases in their normal radio teaching staffs. It is also anticipated that the number of radio production groups and so-called radio workshops in colleges and universities is expected to increase rapidly as a result of this FCC decision. More than 360 colleges and universities now offer specialized courses in radio. New York and Cleveland are already broadcasting programs over this wave band, and the University of Kentucky has recently received authority for the erection of a station to render radio service to out of the way mountain schools.

This development should be of special interest to the medical profession. The American Medical Association and the National Broadcasting Company in the 1937-1938 and 1938-1939 fall and winter seasons broadcast a special series of radio health programs for use in secondary schools over a nationwide network of stations. A selected broadcast from these series received a first award in its class from the Ninth Institute for Education by Radio. Difficulties were encountered, however, owing to time differences between New York and San Francisco and owing to the differences in the length and spacing of classes in various schools. Many schools which desired to use the network programs were unable to do so because their health classes convened at different times or partially overlapped the broadcasting period or occurred on different days. Radio as a medium for coordination with education seems primarily a local problem not to be solved by network broadcasts, except as network broadcasts can be made supplementary to basic local programs. With the development of new stations, noncommercial in character and devoted to education, it is inevitable that attention will be paid to health education. Local medical societies will find a splendid opportunity for cooperation with frequency modulation broadcasting stations now in existence or to be developed. Already the Vermillion County Medical Society in cooperation with radio station WDAN of Danville, Ill., has been broadcasting health talks in cooperation with city and county schools. The opportunities for bringing into the classroom the authoritative voices of community physicians in health talks or round tables and the use of health dramas with participation by student drama classes will be greater than ever before.

1. Federal Security Agency, U. S. Office of Education, Washington, D. C., May 27, 1940, "FCC Ruling on 'Static-Less' F-M Broadcasting Hailed as Boon to Education and Democracy."

STATISTICS ON POLIOMYELITIS

Dauer,[1] of the United States Public Health Service, provides data on the prevalence of poliomyelitis in the United States in 1939 and also summarizes some of the more important results of experimental investigations on poliomyelitis which were reported in the same year. In contrast to the unusually low incidence of poliomyelitis in the United States in 1938, during which time 1,705 cases and 487 deaths were reported, there was a considerable increase in the number of cases in 1939; in the latter year the number of cases was 7,331, a rate of 5.6 per hundred thousand of population. The case rate was highest in New Mexico, where it was 26.1, but in South Carolina, Arizona and Minnesota the rate was over 20. In three other states, Michigan, Utah and California, the case rates were between 15 and 20. In general, during 1939 the distribution of the disease was characterized by a number of localized outbreaks in different areas of the country in addition to a fairly widespread occurrence in the Mountain states. There was considerable variation in the time when outbreaks occurred in different parts of the country; in Charleston the peak of the epidemic occurred in the middle of May, in Detroit in the week which ended on August 26, and in Los Angeles in the week which ended on September 2, while in other areas of high incidence the peaks of outbreaks were reported in September and October. There was similarly a marked variation in the age distribution of individuals afflicted with poliomyelitis in various localities where epidemics occurred. In Charleston County, S. C., for instance, 68 per cent of the patients were under 5 years of age, while in Genesee County, N. Y., only 14 per cent were under 5 years. In Detroit and Buffalo approximately 30 per cent were under 5 years of age. In older groups, age variations were likewise encountered. As an illustration of this, one may again cite Charleston County, where 22 per cent of the patients were from 5 to 9 years of age, 5 per cent were in the 10 to 14 year old group, and 4 per cent were 15 years of age or over, and Genesee County, where 25, 29 and 30 per cent of the patients were in the corresponding age groups.

With regard to the results of experimental work on poliomyelitis which was reported in 1939, Dauer emphasizes the importance of the work of Armstrong.[2] This investigator, who was able to infect the eastern cotton rat by intracerebral inoculation with a strain of poliomyelitis virus, has not only been able to maintain the virus through numerous passages in the cotton rat but has also been able to infect mice with the same strain. This discovery promises to make possible laboratory studies on poliomyelitis on a larger scale. These observations, along with further studies on the occurrence of the virus of poliomyelitis in human feces[3] and the isolation of the virus from urban sewage,[4] as well as other work supported by the National Foundation for Infantile Paralysis, give ample evidence of progress in the experimental study of poliomyelitis.

1. Dauer, C. C.: Pub. Health Rep. **55**: 955 (May 31) 1940.
2. Armstrong, Charles: Pub. Health Rep. **54**: 1719 (Sept. 22), 2302 (Dec. 29) 1939.
3. Kramer, S. D.; Gilliam, A. G., and Molner, J. G.: Pub. Health Rep. **54**: 1914 (Oct. 27) 1939.
4. Paul, J. R.; Trask, J. D., and Culotta, C. S.: Science **90**: 258 (Sept. 15) 1939. Poliomyelitis Virus in Sewage, Current Comment, J. A. M. A. **114**: 142 (Jan. 13) 1940.

ABORTIFACIENT PASTES

In spite of repeated warnings against the use of abortifacient pastes, physicians continue to write to THE JOURNAL requesting information about such substances. These inquirers have concerned themselves mainly with two products—Leunbach's Paste and Interferin. The Bureau of Investigation of the American Medical Association[1] disclosed that Leunbach's Paste is prepared from a number of substances alleged to include potassium hydroxide, sodium hydroxide, iodine and potassium iodide in an olive oil and cacao butter base. Interferin is claimed to be a paste containing iodine. Such pastes have achieved some degree of popularity in Europe, principally in Germany. Numerous reports have indicated, however, that insertion into the uterus of such pastes has resulted frequently in infections and fatalities. Furthermore, laboratory animals treated with such pastes frequently become poisoned and, in a significant percentage, die.

A recent editorial[2] again emphasized the danger involved in the use of abortifacient pastes. Nevertheless, numerous inquiries indicate that active promotion of these preparations continues. In recent advertising material it was stated that Interferin, marketed by Keefer Laboratories of Chicago, was effective in 5,000 cases without fatalities. References to scientific publications in medical journals were not cited.

Leunbach's Paste, marketed by Merz & Company, Inc., Newark, N. J., is also advertised without accompanying authentic evidence as to its safety for therapeutic purposes. Leunbach's Paste is recommended as well for the treatment of delayed menses, primary amenorrhea, dysmenorrhea, endometritis and endocervicitis. Merz & Company, Inc., claims that there is little danger of infection. Nevertheless, the firm states, "with reasonable care neither an air nor a fat embolism will follow the injection of Leunbach's Paste." Reports in the literature have indicated that deaths following the use of similar pastes resulted from air embolism, fat embolism and infection. In a news item in this issue (p. 227) the use of this paste by a Minnesota abortionist is described.

The ethical physician will of course refrain from using such preparations. Other persons who have little interest in the welfare of the patient may risk the use of abortifacient pastes simply because the preparation is easy to secure and easy to administer. Reliable physicians will resist the vicious promotion of such preparations.

1. Abortifacient Pastes, J. A. M. A. **98**: 2155 (June 11) 1932.
2. Abortion and Leunbach's Paste, editorial, J. A. M. A. **111**: 535 (Aug. 6) 1938.

Current Comment

PULMONARY EMBOLISM AND THE WEATHER

Many conditioning factors play a part in the formation of thrombosis and embolism.[1] Recently de Takats and his co-workers[2] have attempted to correlate the time of occurrence of pulmonary embolism in 100 cases with existent weather conditions. This study involved the preparation of meteorographs for the years 1929-1938. The lengthy time element and small number of cases necessitated the employment of the chi square test in order to justify an opinion that the series of temperature deviations based on the date of embolism was formed in a fashion which was not random. Nevertheless—and perhaps surprisingly—certain correlations between the weather and embolism could be demonstrated: it was found that during the spring and fall periods (which showed the most extensive barometric and thermal fluctuations) more emboli occurred, and the summer months were comparatively exempt. The statistical evidence showed that considerable deviations from the mean temperature also seemed to influence the mobilization of blood clots. The authors continue to emphasize, however, that other predisposing and precipitating factors are known to operate in cases of embolism, and the weather is only one of those which lends itself to registration. The tentative conclusion is offered that the maintenance of a steady external environment may be of benefit to the patient threatened with embolism.

METASTASES AND THE VERTEBRAL VEINS

The behavior of many metastatic tumors and abscesses does not fit readily into accepted explanations for the spread of tumors. The absence of involvement of the lungs in some cases especially has been a constant stumbling block to most theories. Now an anatomic explanation is advanced. Batson,[1] in a series of ingenious and careful injections in animals and cadavers, has demonstrated a large group of veins about the vertebral column which he believes form a recognized system. This system, he suggests, can be added to the others: the pulmonary, the caval and the portal. With its connections this venous system allows the direct spread of tumors and abscesses of the thoracico-abdominal wall anywhere along the system without involving the portal, pulmonary or caval systems. Almost every medical journal provides reports of cases, he points out, which are understandable by the mechanism elucidated by this new system of veins but which are otherwise inexplicable. The vertebral vein complex with its cranial and body-wall connections acts as a separate vein system and may serve as a venous by-pass for the other systems. He suggests the simple term "vertebral veins" for this system. A large number of unexplained clinical phenomena are now clarified. Although the therapeutic applications cannot be anticipated, this work explains the previously obscure mechanism of certain processes.

1. de Takats, Geza, and Jesser, J. H.: Pulmonary Embolism: Suggestions for Its Diagnosis, Prevention and Management, J. A. M. A. **114**: 1415 (April 13) 1940.
2. de Takats, Geza; Mayne, Alvin, and Petersen, W. F.: The Meteorologic Factor in Pulmonary Embolism, Surgery **7**: 819 (June) 1940.
1. Batson, Oscar V.: The Function of the Vertebral Veins and Their Role in the Spread of Metastases, Ann. Surg. **112**: 138 (July) 1940.

UNITED STATES V. AMERICAN MEDICAL ASSOCIATION ET AL.

Recently a widely circulated publication has asserted that the Supreme Court of the United States has definitely decided that the practice of medicine is a trade within the meaning of the Sherman Anti-Trust Law of the United States. Such a statement is not correct. The facts are as follows: On July 26, 1939, the District Court of the United States for the District of Columbia sustained the demurrer of the defendants to the indictment in this case and dismissed the charge against the defendants. The government appealed this ruling to the United States Court of Appeals for the District of Columbia. On March 4, 1940, the Court of Appeals filed its opinion reversing the decision of the District Court and remanded the case to the District Court for a trial on the merits of the indictment. Thereupon the defendants petitioned the Supreme Court of the United States to grant a writ of certiorari to review the decision of the Court of Appeals. The United States filed its brief and argument in opposition to the petition of the defendants for a writ of certiorari and therein asked the Supreme Court of the United States not to review the decision of the Court of Appeals at this time because the government argued that the judgment of the Court of Appeals was not final and the Supreme Court ought not review this case until after a trial was had and all the facts appeared in the record. In its brief the government conceded that the question whether the practice of medicine was a trade was a novel one of sufficient importance for the Supreme Court of the United States to settle but urged that this question be not settled by the Supreme Court of the United States until after a trial of the case, when all the facts would fully appear of record. Apparently the Supreme Court of the United States accepted the argument and suggestion of the government and declined to review the decision of the Court of Appeals at this time. The fact that the Supreme Court of the United States declined to review the decision of the Court of Appeals at this time does not mean, as all lawyers know, that the Supreme Court of the United States approved the opinion of the Court of Appeals but means only that for the present the Supreme Court of the United States is satisfied with the action of the Court of Appeals in sending the case back to the District Court for a trial on the merits. If the result of such a trial should be adverse to the defendants, the question whether the practice of medicine is a trade within the meaning of the language used in the Sherman Anti-Trust Law would still be an open question for the Supreme Court of the United States to decide. The Supreme Court of the United States has not yet decided that the practice of medicine in the District of Columbia is a trade within the meaning of the language of the Sherman Anti-Trust Law.

MEDICAL PREPAREDNESS

In this section of The Journal each week will appear official notices by the Committee on Medical Preparedness of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medical preparedness, and such other information and announcements as will be useful to the medical profession.

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* Deceased.

CHECK AND RECHECK YOUR SCHEDULES

Many thousands of the schedules returned by physicians indicate that physicians have, in many instances, omitted important data or have failed to follow instructions in answering questions.

An example of a frequent omission is the failure to place a cross in the square indicating sex—names are not always certain indexes of sex. The date of birth is frequently omitted. If English is the only language spoken, no mark of any kind should be placed in the language squares; zeros in the squares are only confusing and must be crossed out before the information can be transferred to punch cards. On some schedules the year of graduation from medical school is omitted or, when the year of graduation is given, it does not always agree with the record in the American Medical Directory. A physician cannot be classified both in general practice and in a specialty—put a cross in the square opposite one or the other.

There has been some confusion regarding the designation of the proper specialty. Some physicians have indicated 1 (a) Surgery, under Industrial Practice, when they should have placed a cross opposite either 60.1, Surgery, or 60.6, Orthopedic Surgery. If a physician's practice is Obstetrics and Gynecology he should mark 60.5 but not 60.3, Obstetrics, and 60.4, Gynecology.

The indication of previous military experience has been omitted in many instances. Likewise a number of physicians have recorded no information under the heading "Present Commission Held." Perhaps these physicians have had no previous military experience and do not now hold a commission. It would be helpful if physicians who have had no military experience or do not hold a commission would write above the headings 65. "Previous Military Experience" and 68. "Present Commission Held" the word "none."

In many instances in which some previous military experience has been indicated or a commission in some branch of service has been checked the physicians have failed to state the rank. Please indicate rank accurately. If a commission is held in the Navy, it is important that the grade of Lieutenant be stated thus: Lieutenant, Lieutenant Junior Grade (Asst. Surg.), Lieutenant Junior Grade (Acting Asst. Surg.).

Many physicians have omitted a check for question 74. "In the event of war, will you volunteer for military service?" Yes ☐ No ☐. An answer to this question merely indicates a voluntary disposition on the physician's part to offer his services to the military establishment. If undecided at this time, the physician should indicate by writing the word "undecided" in the margin and leaving the squares blank.

PHYSICIANS NEEDED FOR ARMY SERVICE

The physician, like every other American, has become actively interested in our national security and stands ready to contribute his services as required for military preparedness.

The immediate problem in this connection is one that concerns the War Department, and primarily the young physician. The War Department must procure sufficient additional personnel from the medical profession to augment the medical services of the Regular Army as the various increases are made in the strength of the Regular Army, as authorized by Congress to meet the partial emergency. The young physician is especially concerned because it is usually advantageous, and is often more convenient, for him to serve with the Army.

Present plans of the War Department are designed to make service attractive and instructive for the young physician. If the physician holds a Medical Corps Reserve commission he can be ordered to active duty if he so requests. If he does not hold a commission but is under 35 years of age and is a comparatively recent graduate of an accredited school, he may secure an appointment in the Medical Corps Reserve for the purpose of obtaining extended active duty for a period of one year or longer. Duty is given at general hospitals, station hospitals, and with Tactical Units, and embraces all fields of general and specialized medicine and surgery. Excellent postgraduate training is obtainable in connection with Aviation Medicine. After serving six months of active duty in the continental United States, a Reserve officer may request duty in Hawaii, Panama or other United States territories and possessions. The initial period for duty is for one year and yearly extensions are obtainable thereafter until the international situation becomes more clarified and our domestic military program becomes stabilized.

Many young doctors who have served with the Army on extended active duty have taken the competitive examination for entrance into the Medical Corps of the Regular Army. Extended active duty affords an excellent opportunity for the physician to observe modern military medicine and the facilities that exist for a complete and comprehensive medical practice.

Pay is according to rank and, including subsistence and quarters allowances for an officer with dependents, amounts to an annual sum of $3,905 for a Captain and $3,152 for a First Lieutenant; or, without dependents, to an annual sum of $3,450 for a Captain and $2,696 for a First Lieutenant. In addition, reimbursement is made for travel to duty station and return.

Further information may be obtained by writing to the Surgeon General, U. S. Army, Washington, D. C.

ORGANIZATION SECTION

MEDICAL ECONOMIC ABSTRACTS

FARM SECURITY SERVICE IN LOUISIANA

Beginning April 1, 1939, eleven of the thirteen doctors in Avoyelles Parish, La., agreed to serve 250 families who joined the medical group of the Farm Security Administration out of 400 families receiving FSA assistance. Contributions varying from $10 to $24 per family were put into a fund from which to pay for medical services and drugs for a year. The patients had only to present their medical card to the doctors of their choice belonging to the Parish Medical Society. The fees were nominally $2.50 for an office visit, $3.50 for house calls, including medicine in both cases, 25 cents for each mile after 2 miles, $25 for obstetric cases, $5 for minor surgery and from $15 to $25 for fractures.

The total amount in the fund was $3,200 divided into twelve instalments of $266.50 each, which amount was shared among the physicians furnishing service in proportion to the amount of their bills rendered. The total bills for the year were $5,800, of which the physicians received $3,200. This amounted to an average collection of 55 per cent, out of which the doctors had to pay for drugs, which amounted to about 35 per cent of the amount collected and left the doctor receiving about 36 per cent of his fees. The average doctor booked $527 and collected $291, of which $100 went to a druggist. It was the unanimous opinion of the doctors represented in the Parish Medical Society that, since they could not make a living collecting 36 per cent of these fees, they did not therefore feel justified in continuing the FSA plan. As a whole the patients did not abuse the service with excessive demands, and the doctors tried to keep unnecessary visits at a minimum and had as few house visits as possible. Since it was believed it would not be possible for this group to contribute any larger amounts, the doctors decided that they preferred to charge and collect from each patient as an individual.

Material supplied by Dr. Kirby A. Roy, Mansura, La.

MEDICAL EDUCATION IN GERMANY

In the educational magazine *Die Erziehung*, published in Leipzig (**14:** 344 [May] 1939), there appeared an article by Hans Wenke entitled "Pedagogic Conditions in Germany." That portion of the article which relates to medicine is here translated:

REORGANIZATION OF THE STUDY OF MEDICINE

The university reforms carried out in recent years within the framework of national socialist cultural and educational policy have been most noticeable in those branches of science in which the innovations were responsible for a reorganization of the course of study. Such was the case in all branches in which a precise semesterial division of the matter of instruction was previously laid down. Let us recall the reorganization of the study of law, economics, agricultural economics, forestry and the university training of teachers previously reported in this journal.

The reorganization of the study of medicine and of several allied courses of study was effected quite recently in like manner. It was prompted by various motives. To begin with, an abbreviation of the study of medicine became necessary for sociological reasons and, as a result of the latest development of research and politico-philosophical considerations, new fields of study came into the limelight and were added significantly to the curriculum. These measures could be harmonized only by a thorough reorganization of the complete course. The reform implied the cooperation of two ministerial authorities, as the ministry for the interior regulates the requirements and conduct of medical examinations while the ministry of education is responsible for the course of study.

The decree emphasizes the fact that the abbreviation of the duration of medical training, like the abbreviation of other academic professions, became an imperative necessity for sociological and economic reasons. This is obtained in this instance by requiring four semesters instead of five for admission to the preliminary medical examination in anatomy and physiology. The medical preliminary examination has consisted up to the present of a section of natural sciences (chemistry, physics, zoology, botany) and a section of anatomy and physiology (anatomy, general physiology, physiologic chemistry). The requirement of admission to the first section used to be two semesters and, to the second section, three additional semesters. It is the aim at present to combine these two sections. As the clinical training for six semesters is retained, the complete medical course lasts ten semesters.

A further measure will consist in abbreviating the duration of the medical final examination. Heretofore this has been spread over two semesters on the average, with a maximum time allowance of two years.

The most important and decisive innovation, however, consists of including in the course of study the one year period of practical training. Until now this was done following the final examinations and the physician had to serve one year of successful internship at a university clinic, policlinic or designated hospital before being permitted to practice. From now on this will be done through practical work during the semester and through working as an assistant during vacation. This regulation can be easily fitted into the new order of studies, which was designed more especially to meet the requirements of the practicing physician with consequent emphasis on the parallel completion of theoretical studies and practical training. Besides nursing and medical service in the air defense corps, obligatory service in the rural districts or in industrial establishments have been added to the curriculum. This used to be done voluntarily. It will last six weeks and should be completed in the vacation between the third and fourth semesters. The assistantship of six months will be completed in two parts in the vacation periods between the seventh and eighth and between the ninth and tenth semesters. At the university clinics it is permitted only in surgery, internal medicine, gynecology and pediatrics. The second part of the assistantship should be completed in a different branch.

The reorganization is further characterized by the arrangement of the courses of study. In doing this the development of modern medical research in new fields and the sociological duties of the physician in the Third Reich were taken into consideration. On the initiative of the national physician leader and of the leader of the national association of university instructors, new obligatory lectures have been added to the curriculum such as history of medicine, medicinal herb excursions, work, sport and military physiology (flying included), policies relating to population and others in the preclinical part; radiology, natural therapy, heredity and eugenics, occupational diseases, child welfare, emergency treatment, social insurance and examination, medical jurisprudence, professional ethics and others, in the clinical part.

The reorganization, besides responding to an actual sociological necessity, represents the fulfilment of requirements brought about by the inner changes of the science of medicine and the amplification of practical medical duties. On this question the statements of Ferdinant Sauerbruch published in this journal approximately two years ago are of interest. Sauerbruch pointed out convincingly the theoretical as well as practical aspect of the study of medicine and the requirements resulting therefrom.

Naturally it cannot be overlooked that courses of study merely create the administrative requirements for the successful fulfilment of new tasks; the realization of the higher requirements, however, depends on the personal ability of the students. In

explaining the reorganization, the secretary of education emphasized this circumstance by pointing out that the intensified curriculum should serve as an incentive to make up by industry and concentration for the time saved; he emphasized that the duties and responsibilities of the practicing physician became greater in the national socialist state, voicing thereby the general conviction that the problems of university reform have been lately of a moral rather than of an administrative-technical character.

It will be noted that under the new regulations the length of the medical (and premedical) course is reduced to ten semesters, or five years, as contrasted with the seven or eight year program which prevails in the United States. Notwithstanding this abbreviation of the course, new subjects are to be required, among them "medicinal herb excursions," a strange anachronism. The "assistantship," so called, would appear to correspond much more closely to a clinical clerkship than to an internship, since it is interposed between the seventh and eighth and between the ninth and tenth semesters. Obviously the undergraduate student is not prepared to assume the responsibilities which we associate with the function of an intern.

LEGAL SERVICES FOR LOW INCOME CLASSES

The close parallelism between the problems of the legal and the medical profession is shown by recent discussions in the *American Bar Association Journal*.[1]

The Bar Association has a Committee on Legal Service Bureaus, which in its report to the house of delegates of the American Bar Association in Chicago in 1939 said:

> For some time it has been felt in many quarters that the organized bar of this country though adequately serving those able to pay substantial fees, and though adequately serving those in need of legal aid without charge, may be derelict in a duty to a vast middle group, which may be referred to as "the low income group." It has been suggested, accordingly, that the lawyers themselves should provide bureaus to furnish such legal aid at nominal charge. Experiments are now being conducted in Philadelphia and are about to be undertaken, if not already under way, in Chicago, New York, Minneapolis, San Francisco and other large cities. In general, the proposals are that the work should be confined to a group with incomes up to $2,000, it being felt that such a group do not deserve free legal aid and, on the other hand, do not want to be pauperized, in a sense, by having to resort to a purely charitable institution. It is felt that on the other hand they cannot pay the fees required and deserved by the larger and better established law firms. It is also suggested that in this way we shall not be taking away from the practice of any lawyer, but be adding to the total amount of legal service available to the public.
>
> The plans in contemplation for operation propose neighborhood law offices equipped to handle matters of a minor nature on a self-sustaining basis. It is felt that younger lawyers and lawyers without sufficient practice otherwise to employ their full time can competently staff those bureaus; and, in view of the quantity of work and the specialized nature, will be able, for small fees, to take care of the requirements of persons in the group referred to, the schedule of fees generally to run from $2 or $3 for a conference up to $10 for matters of greater scope, with or without provisions for handling claims such as personal injury claims, on a contingent basis.

The committee is confronted with the suggestion that organized society may set up bureaus to compete with individual lawyers and that, unless the bar associations act, something of this nature will be forced on the profession. The data available to the committee were so extensive that it did not feel ready to make definite recommendations. No member of the committee had any criticism for the system of free legal aid bureaus, which, as already noted, exist in several large cities. The committee therefore recommended further investigation and invited suggestions and discussions from the members of the association.

It is also significant that examples of similar action are sought for in Europe. Lloyd K. Garrison, dean of the Law School of the University of Wisconsin, reports on a study made in Sweden on the occasion of a visit there.[2] The Swedish Free Legal Proceedings Act of 1919, in connection with the "Public Institutes for Legal Assistance," which correspond to our legal aid bureaus, provides for an extensive system of free and low cost legal services. The Public Institutes are governmental undertakings, the first of which was founded in Gothenburg in 1872 and which now exist in the principal Swedish cities.

Dean Garrison also describes the Milwaukee Legal Aid Bureau and compares it with the Stockholm institutes, finding that the cost and scope of the work done in Stockholm are much greater although the two cities are of much the same size.

1. Report of the Committee on Legal Service Bureaus, Am. Bar A. J. **26**: 125 (Feb.) 1940.

2. Garrison, Lloyd K.: Legal Service for Low Income Groups in Sweden, Am. Bar A. J. **26**: 215 (March) 1940.

WOMAN'S AUXILIARY

Alabama

The annual meeting of the auxiliary to the Medical Association of the State of Alabama was held in Birmingham April 16-18. Mrs. J. U. Reaves was president during 1939-1940. There are seven active auxiliaries to county medical societies in Alabama, having a membership totaling 211.

The auxiliary to the Jefferson County Medical Society has met regularly in Bessemer. Doctors' Day was observed in March and a public relations meeting was held. The auxiliary maintains a Loan Closet for the use of indigent persons at the Bessemer Health Center.

Florida

Mr. T. E. Middlebrooks, district supervisor, U. S. Bureau of Narcotics, spoke on "The Narcotic Problem" at a meeting of the auxiliary to the Duval County Medical Society in Jacksonville, March 7.

Georgia

The auxiliary to the Baldwin County Medical Society held its March meeting in Milledgeville. The auxiliary was awarded a first prize in the recent *Hygeia* contest.

Dr. J. C. Patterson, president-elect of the Medical Association of Georgia, discussed "The Need for an Auxiliary" at a meeting of the auxiliary to the Tenth District Medical Society in Augusta, February 14.

The auxiliary to the Fulton County Medical Society held a public meeting recently at the Academy of Medicine in Atlanta. The speakers were Dr. Clarence Laws, "Allergy and Hay Fever"; Dr. Jack Norris, "Milk in Relation to Health," and Dr. Glenville Giddings, chairman, health education committee of the medical society.

Dr. Harold W. Muecke spoke on child welfare and Dr. Marvin Harris on the treatment of hookworm at a recent meeting of the auxiliary to the Ware County Medical Society in Waycross.

Iowa

The auxiliary to the Polk County Medical Society met in Des Moines March 5. Speakers were Dr. Howard D. Gray, president of the Polk County Medical Society, and Dr. John H. Peck, superintendent of the State Sanatorium at Oakdale. Students from Drake University gave a musical program.

Louisiana

The auxiliary to the Caddo Parish Medical Society met in Shreveport, March 13. Dr. J. H. Musser, New Orleans, discussed "The Problems of State Medicine and How the Doctor Looks at Them."

The auxiliary to the Calcasieu Parish Medical Society entertained the auxiliaries to the Beauregard and Jefferson Davis parish medical societies in Lake Charles recently. Mrs. S. M. Blackshear, president of the auxiliary to the Louisiana State Medical Society, was speaker.

The chief philanthropic work of the auxiliary to the Terrebonne Parish Medical Society during the year was providing eyeglasses for needy school children.

Auxiliaries to the Beauregard and LaFourche parish medical societies have recently been organized.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ARIZONA

State Medical Election.—Dr. William Paul Holbrook, Tucson, was chosen president-elect of the Arizona State Medical Association at its recent annual meeting and Dr. Delamere F. Harbridge, Phoenix, was installed as president. Dr. Leslie R. Kober, Phoenix, is vice president and Dr. William Warner Watkins, Phoenix, secretary.

Society News.—The Pima County Medical Society was addressed in Tucson recently by Drs. Thomas J. Hardgrove on "Relationship of Psychiatry to General Medicine"; Ervin H. Holvey, "Chronic Interstitial Pancreatitis," and Charles W. Rudolph, "Thoracic Surgery on Ex-Service Men."

ARKANSAS

District Meetings.—The First Councilor District Medical Society held its seventy-fifth semiannual meeting in Jonesboro, recently. Among the speakers were Drs. Jabez F. Jackson, Walnut Ridge, on "Mental Health of the Infant"; Walter S. Lawrence, Memphis, Tenn., "Medical Uses of Ultraviolet and Infra-Red Radiation"; John B. Elders, Walnut Ridge, "Contraindications in Finding and Treating Syphilis," and Joe Verser, Harrisburg, "The Neurotic; the Constitutionally Inadequate and Mildly Insane."——The Ninth Councilor District Medical Society was addressed in Harrison, June 4, by Drs. Henry T. Smith, McGehee, president of the state medical society; Donald W. Dykstra, Little Rock, on syphilis; Francis Walter Carruthers, Little Rock, knee joint injuries; Thomas Duel Brown, Little Rock, diagnosis of common kidney ailments, and Martin E. Rust, Harrison, differential diagnosis between acute conjunctivitis, acute iritis and acute glaucoma.

CALIFORNIA

Personal.—Dr. Jacob C. Geiger, director of public health, city and county of San Francisco, has been granted a leave of absence of eight weeks for a public health mission to the Orient. He was to sail June 8.——Dr. Frank J. Bailey, who formerly served as health officer of Red Bluff, has again been appointed to the position, succeeding Dr. Russell G. Frey.——Drs. Francis Marion Pottenger, Monrovia, and A. Elmer Belt, Los Angeles, have been appointed members of the state board of health.

Seventieth Anniversary of State Board of Health.—The Northern California Public Health Association devoted its meeting, May 20, in San Francisco to celebration of the seventieth anniversary of the California State Department of Public Health. Among those present were Dr. Morton R. Gibbons, San Francisco, whose grandfather, Dr. Henry Gibbons, was the first president of the board; Mrs. Annie L. Blanchard, Berkeley, daughter of Dr. Fred W. Hatch Sr., who served as secretary of the board from 1876 to 1887, and Miss Margaret Hatch, Mill Valley, and Dr. Francis N. Hatch, San Francisco, grandchildren of Dr. Hatch Sr. Dr. Thomas M. Logan was the first secretary of the board, 1870-1876. Others present included Dr. Harry E. Foster, Berkeley, the son of the late Dr. Newell K. Foster, Oakland, who was appointed secretary in 1901; Dr. Adelaide Brown, San Francisco, member of the board from 1915 to 1930; Dr. Wilfred H. Kellogg, Berkeley, bacteriologist in 1908, secretary and executive officer 1918 to 1920 and since 1920 chief of the state division of laboratories. According to *California and Western Medicine*, California was the second state to establish a state board of health. Massachusetts organized its board six months before California.

DELAWARE

Nemours Hospital for Crippled Children.—The new hospital of the Nemours Foundation for Crippled Children, near Wilmington, was to receive the first group of fifty children, July 1, newspapers recently reported. The number of patients is to be gradually increased to 300, it was stated. Construction on the hospital started in the fall of 1938 under the auspices of the Nemours Foundation for Crippled Children, which was created in 1936 under the terms of the will of the late Mr. Alfred I. du Pont. The construction of the hospital was part of a four point program adopted by the advisory board: medical care of the crippled child, which begins with the construction of the new hospital; education of the crippled child; research on problems relating to the crippled child, and graduate instruction for persons interested in this field. Concerning the education of the crippled child, it was planned, after the hospital was opened, to build several cottages, separate from the hospital, for the convalescent school children, with a school building to be built later, according to an early announcement. In the educational program emphasis will be placed on the vocational education of the child over 14 years of age. Following this training it is hoped to find permanent employment for these children. All types of training will be offered, the child's physical handicap to be the deciding factor. Primary and secondary school education will be given to younger children. The research program will include both laboratory and clinical problems. Dr. Alfred R. Shands Jr., formerly associate professor of surgery in charge of orthopedics, Duke University School of Medicine, Durham, N. C., has been medical director of the foundation since 1937.

DISTRICT OF COLUMBIA

New Officers of District Society.—Dr. Henry R. Schreiber, Washington, was chosen president-elect of the Medical Society of the District of Columbia at a meeting of the society in May; he will take office July 1, 1941. Dr. Daniel L. Borden assumed the presidency July 1, succeeding Dr. John H. Lyons. Other officers elected at the recent meeting include Drs. Elizabeth E. Chickering and Robert Lomax Wells, vice presidents. The annual scientific assembly of the society will be held October 15-17 of this year.

Trudeau Medal Awarded to Dr. White.—The National Tuberculosis Association at its annual meeting in Cleveland, June 3-6, awarded the Trudeau Medal to Dr. William Charles White, Washington, chairman of the association's research committee for twenty years. Dr. White graduated from the University of Toronto Faculty of Medicine in 1902. From 1907 to 1923 he was director of the Tuberculosis League of Pittsburgh and since 1923 has been pathologist consultant to the U. S. Public Health Service. Dr. White also has been chairman of the committee on drug addiction of the National Research Council since 1929 and scientific director of the Committee on Research on Syphilis since 1931. He was president of the National Tuberculosis Association from 1933 to 1936. During the World War he was director of the division for relief and prevention of tuberculosis of the American Red Cross in France and Italy.

GEORGIA

Daughter of Dr. Crawford Long Dies.—Mrs. Eugenia Long Harper, only living child of Dr. Crawford W. Long, discoverer of ether as an anesthetic, died in Atlanta, July 5, aged 86. Mrs. Harper had been in ill health since April. Shortly after attending a celebration in Jefferson, April 8, in conjunction with the first day sale of the Crawford W. Long postage stamp, she was injured in a fall, according to the New York *Times*.

ILLINOIS

Typhoid Epidemic—Welfare Director Dismissed.—A. L. Bowen, state director of public welfare since 1933, was fined $1,000 and was ordered removed from office, July 11, for negligence in connection with a typhoid epidemic at Manteno State Hospital in 1939 in which more than sixty lives were lost. The sentence was imposed by Judge James V. Bartley, Joliet. Mr. Bowen has spent many years in state service, having been superintendent of charities from 1917 to 1921. In 1931 he was again appointed superintendent of charities and was made welfare director by Governor Horner in 1933. Dr. Ralph T. Hinton, managing officer of the Manteno hospital at the time of the epidemic, and Mrs. Lillian Williams, dietitian, were indicted at the same time as Bowen, but charges against them were dropped, it was said.

Chicago

Personal.—Dr. Edward J. Stieglitz has resigned as a member of the staff of Presbyterian Hospital to accept an appointment at the National Institute of Health, Washington, D. C., where he will conduct clinical and experimental research on the problems of aging.——Dr. James B. Herrick was awarded the honorary degree of doctor of science at the convocation of Northwestern University, June 16, and in May was presented with the "Gold Headed Cane" by the University of California Medical School, San Francisco, for his accomplishments in the practice of medicine, in teaching and in investigation.

Grant for Research in Pediatrics.—The committee on the Elizabeth McCormick Child Research Grant of the Institute of Medicine of Chicago announces that it has the sum of $1,500 to be awarded to qualified investigators in the Chicago area for the aid of research in child welfare. Projects should in a broad sense be in the field of pediatrics, it was said. Applications by letter will be received up to October 15 and the award will be made soon after that date. Address all communications to Dr. John Favill, secretary of the committee, 122 South Michigan Avenue, Chicago.

INDIANA

The Boy Scout Committee.—For the past ten years the boy scout committee of the Indianapolis Medical Society has provided medical attention for the scouts who attend the summer camp at the Scout Reservation, according to the society's bulletin. The average attendance is about 250, making it necessary to employ a resident physician. The fund to pay the physician was started by Dr. John W. Carmack and has been perpetuated by special gifts, popular subscription and "sustaining memberships" of $10 each, from the membership of the society. The annual sum needed has been from $150 to $200. At a meeting, May 21, on a motion sponsored by the boy scout committee, the society voted to designate this fund as "The John W. Carmack Memorial Fund." The money raised each year is to be held by the treasurer of the scout council and be expended as directed by the boy scout committee of the society to defray the medical expenses at the scout camp. In addition to the first-aid care of illness and accidents, the committee acts in an advisory capacity in maintaining the proper sanitation. There has also been a continuous effort to teach the boys the principles of health hygiene. This instruction reaches about 1,200 boys annually. Donations may be made through the secretary of the society or through the chairman of the boy scout committee.

MAINE

Society News.—Clarence C. Little, Sc.D., Bar Harbor, presented a "Review of Cancer Control Programs in Other States with a Discussion of Changes in Our Own State Program" before the Cumberland County Medical Society in Portland, May 23.——A panel discussion on head injuries was conducted before the Portland Medical Club recently by Drs. Erastus E. Holt Jr., Francis W. Hanlon, Harry E. Macdonald Jr. and Charles H. Hunt.——The Kennebec County Medical Association was addressed in Togus, May 16, by Dr. Joe Vincent Meigs, Boston, on "Female Endocrinology."

MINNESOTA

Abortionists Sentenced.—William E. McCoy, St. Paul, aged 35, pleaded guilty, April 1, in Hennepin County to practicing healing without a basic science certificate and paid a fine of $500. He also pleaded guilty to performing a criminal abortion and received a sentence of four years in the state reformatory at St. Cloud, which was suspended. On May 13, Samuel M. Stern, a licensed osteopath, and Agnes L. Shanks, his office assistant, pleaded guilty in the district court of Ramsey County to an information charging them jointly with the crime of abortion. Both were sentenced to terms not to exceed four years at hard labor. Several deaths have been attributed to Stern's activities as an abortionist, it was stated. In two cases handled by Stern state authorities are reported to have found that Leunbach's paste, a product of Merz & Company Chemical Works, Inc., Newark, N. J., was used. In their report, they state that evidence found in the recent case in which Stern and Shanks were apprehended indicates the danger of using this paste. The report further states that it is hoped that state and federal authorities will find a way to deal effectively with the sale of this product in Minnesota.

MISSOURI

Dr. Schorer Resigns as Director of Health.—Dr. Edwin H. Schorer has resigned as director of health of Kansas City, effective May 23, newspapers reported. He held the position five years.

Ricketts Prize Awarded to Pathologist.—Harold R. Reames, Ph.D., now a pathologist at Washington University School of Medicine, St. Louis, has been awarded the annual Howard Taylor Ricketts Prize by the University of Chicago for his research on a local virus infection of the upper respiratory tract. Dr. Reames' research was done at the University of Chicago during his graduate studies. He received the degree of doctor of philosophy from the University of Chicago in 1940.

Casselberry Prize Awarded to Dr. Hansel.—The Casselberry Prize of the American Laryngological Association was awarded to Dr. French K. Hansel, assistant professor of clinical otolaryngology, Washington University School of Medicine, St. Louis, during the annual meeting of the association in May in Rye, N. Y. The prize was given to Dr. Hansel for original cytologic observations of the secretions of the nose and sinuses in allergy. Dr. Hansel graduated at St. Louis University School of Medicine in 1918. The Casselberry award was established by the late Dr. William E. Casselberry, Chicago, when he devised a fund to the American Laryngological Association, the interest to be awarded in sums of $500 or less for outstanding work in laryngology and rhinology.

MONTANA

Society News.—John X. Newman, B.S., Butte, was elected president of the Montana Public Health Association at the annual meeting in Bozeman in June, and Dr. William F. Cogswell, Helena, secretary.——The Chouteau County Medical Society was recently organized at Fort Benton, with Dr. Denton J. Cooper, Big Sandy, as president.

State Medical Election.—Dr. William E. Long, Anaconda, was named president-elect of the Montana State Medical Association at the annual meeting in Bozeman, June 18, and Dr. James I. Wernham, Billings, was installed as president. Dr. Herbert T. Caraway, Billings, was elected vice president and Dr. Thomas F. Walker, Great Falls, reelected secretary.

NEW HAMPSHIRE

State Medical Election.—Dr. Ezra A. Jones, Manchester, was elected president of the New Hampshire Medical Society at the annual meeting in Manchester in May. Dr. Charles H. Dolloff, Concord, was elected vice president and Dr. Carleton R. Metcalf, Concord, reelected secretary. Fifty year gold medals were presented to Drs. Arthur K. Day, Concord; Frank E. Kittredge, Nashua, and George H. Gray, Hyannis, Mass.

NEW YORK

Society News.—Dr. Charles M. Carpenter, Rochester, was elected president of the New York State Association of Public Health Laboratories at the annual meeting in Rochester in May; Dr. Francis F. Harrison, Cooperstown, vice president, and Mary B. Kirkbride, Albany, was reelected secretary.——Drs. Clayton W. Greene, Buffalo, and David D. Rutstein, Albany, addressed the Ontario County Medical Society at its quarterly meeting in Geneva, July 9, on "The New Aspects of Treatment and Control of Pneumonia," and Dr. John R. Williams and Arthur C. Parker, Rochester, on "The Use of Hobbies in Therapeutics."

New York City

Thirty-Five Years in Health Department.—Dr. Jules Leon Blumenthal, director of the bureau of child hygiene in the New York City Department of Health, will retire September 1. Dr. Blumenthal began his work with the health department in 1905 as a medical inspector and advanced through civil service examinations to various positions, becoming director of the bureau of child hygiene in 1924.

Physicist Receives Janeway Medal.—Edith H. Quimby, A.M., associate physicist of Memorial Hospital for Treatment of Cancer and Allied Diseases, received the Janeway Medal at the annual meeting of the American Radium Society in New York, June 10. The medal has been awarded annually since 1937 to the Janeway Lecturer at the society's annual meeting, and in that year medals were presented to all who had delivered the Janeway Lecture since it was established in 1933 in honor of a pioneer radium therapist, Dr. Henry Harrington Janeway. Mrs. Quimby's lecture was on "The Specification of Dosage in Radium Therapy."

Honorary Degrees.—Dr. Nathan B. Van Etten, President of the American Medical Association, received the honorary degree of doctor of public health from New York University College of Medicine, June 5.——Dr. Alfred E. Cohn of the Rockefeller Institute for Medical Research received the honorary doctorate of science from Columbia University at its June commencement.——Drs. Herbert S. Gasser, director of the Rockefeller Institute for Medical Research, and Eugene L. Opie, professor of pathology, Cornell University Medical College, received the honorary degree of doctor of laws at the annual commencement of Washington University, St. Louis.——Dr. Stuart Lessley Craig received the honorary degree of doctor of science from his alma mater, the Medical College of Virginia, Richmond, at the commencement, June 4.

OHIO

Memorial to Pioneer in Miami Valley.—A granite monument to Dr. John Hole, the first physician in the Miami Valley, was unveiled in Centerville, Montgomery County, May 31. Speakers at the ceremony were Drs. Benjamin R. McClellan, Xenia, chairman of a committee that raised funds for the memorial; Walter M. Simpson, Dayton, secretary of the committee, and former Gov. Myers Y. Cooper. The monument is on a roadside plat near where Dr. Hole began practice and near the cemetery in which he is buried. According to information furnished by his descendants, Dr. John Hole was born in New Jersey in 1755 and educated in Germany. He served in the Revolutionary War on the staff of Gen. Richard Montgomery, for whom Montgomery County was named at Dr. Hole's suggestion. Dr. Hole left New Jersey for the Middle West in 1786, settling first in Kentucky and then in Cincinnati, where he remained until 1797. In the latter year he settled about 6 miles from Dayton and founded the town of Woodbourne, now practically deserted. Dr. McClellan started the movement and, besides Montgomery, the following counties joined in the contributions for the monument: Greene, Clinton, Butler, Preble, Clark, Miami, Darke, Champaign and Warren. The First Baptist Church of Centerville, successor to the Sugar Creek Baptist Church, of which Dr. Hole was a member, donated an acre of land for the memorial. The committee in charge of raising the funds was as follows: Drs. Edwin M. Huston, Dayton, chairman; Alonzo H. Dunham, Dayton; Benjamin W. Dudley Keever and Charles D. Slagle, Centerville; Dr. Simpson and Dr. McClellan.

OREGON

Society News.—Dr. Ray W. Hausler, Portland, addressed the Multnomah County Medical Society, Portland, May 15, on "Streptococcic Infection in Relation to Pathological and Clinical Findings."——Dr. Robert Yorke Herren, Portland, addressed the Central Willamette Medical Society in Albany recently on "Recognition and Early Treatment of Acute Head Injuries."——A symposium on "Fluid Administration by Parenteral Methods" was presented before the Yamhill County Medical Society, McMinnville, recently by Drs. Albert W. Holman, Louis P. Gambee, Homer P. Rush and Thomas D. Robertson, all of Portland.

University Medical Library Dedicated.—The University of Oregon Medical School, Portland, dedicated a new library and auditorium in Sam Jackson Park, June 7. Dr. John E. Weeks, honorary professor of ophthalmology in the medical school, who contributed the first $100,000 toward the building, laid the cornerstone and later a plaque honoring Dr. Weeks was unveiled in the main entrance hall of the library. Dr. Richard B. Dillehunt, dean of the medical school, presided and the speakers included Dr. Frederick A. Kiehle, Dr. Weeks, Chancellor Frederick M. Hunter of the state board of higher education and Donald M. Erb, Ph.D., president of the university. In addition to the donation by Dr. Weeks, funds for the library were provided by the Rockefeller Foundation ($100,000) and the Public Works Administration ($163,000).

PENNSYLVANIA

District Meeting.—The Eleventh Councilor District of the Medical Society of the State of Pennsylvania held a meeting in Johnstown, June 20. Dr. Eugene P. Pendergrass, Philadelphia, gave an address on "Silicosis" and Dr. Henry T. Price, Pittsburgh, on "Bringing Infant Feeding Up to Date." Addresses on activities of the state society were made by Drs. Francis F. Borzell, Philadelphia, president-elect; Chauncey L. Palmer, Pittsburgh, chairman of the committee on public health legislation; Belford C. Blaine, Potusville, chairman of the commission on diabetes, and David E. Hemington, Uniontown, member of the committee on industrial health. Fifty-year certificates were presented to Drs. Jason G. Hanks, Everett, William E. Matthews, Johnstown, and William N. Pringle, Johnstown.

Philadelphia

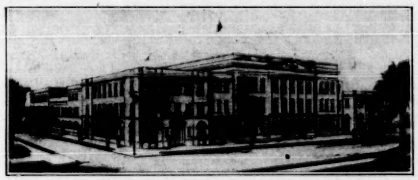
Postgraduate Lectures.—Mercy Hospital presented its seventh annual course of postgraduate lectures under the auspices of its attending staff, May 13, 15 and 17. Four lectures each were presented on diseases of nutrition, diseases of the abdomen and diseases of the chest.

Honorary Degrees.—George H. Meeker, Ph.D., dean and professor of biochemistry, University of Pennsylvania Graduate School of Medicine, received the honorary degree of doctor of science from the university at the commencement, June 12. The same degree was conferred on Dr. Samuel McC. Hamill, for several years head of the state emergency child health committee, and president of the Philadelphia Child Health Society.——Dr. Henry K. Mohler, dean and Sutherland Prevost professor of therapy, Jefferson Medical College, received an honorary degree from Juniata College, Huntingdon, in June.

University to Have Cyclotron.—Mr. William H. Donner, retired industrialist, has given to the University of Pennsylvania $200,000 for construction of a cyclotron primarily for research on the treatment of cancer. This will be the third cyclotron of its size in the world, matching in capacity the largest now in operation, which is in the laboratory of Ernest O. Lawrence, Ph.D., at the University of California. The second is now under construction at the Carnegie Institution of Washington. The new apparatus will be installed in a special building adjoining the department of radiology, in the rear of a new unit of the University Hospital now in process of construction. The instrument will weigh 250 tons and will generate energy equivalent to that of about 200 pounds of radium. Two technics will be employed for the treatment of cancer: first, the bombardment of various chemicals, which, thus being rendered radioactive, can be administered to patients, and, second, direct application to the patient of a beam of neutrons. This gift from Mr. Donner, who in 1932 established the International Cancer Research Foundation, brings to $400,000 his gifts to the bicentennial fund of the university. In 1937 he donated $200,000 to establish the William Henry Donner Jr. Department of Radiology in memory of his son.

SOUTH CAROLINA

New Medical College Building.—The Medical College of the State of South Carolina, Charleston, recently dedicated a new building which contains facilities for the school of nursing and the school of medicine and for clinical work. Funds for the building were furnished by the alumni association of the medical school, which contributed $172,000, and a PWA grant of $141,000. The clinic building has been named the Alumni Memorial Clinic. The college buildings, new and old, now



New medical college building at Charleston.

form three sides of a rectangle which occupies more than two blocks. At the dedication ceremony it was announced that $125,000 had been given anonymously for an auditorium that will complete the rectangle. The speakers at the dedication were Gov. Burnett R. Maybank; Drs. Robert Wilson, dean of the medical college; Thomas A. Pitts, Columbia, of the board of trustees; William Cyril O'Driscoll, assistant professor of anatomy; Leonidas M. Stokes, Walterboro, chairman of the state medical association's committee on the medical college; James R. Desportes, Fort Mill, president of the alumni association; Mr. H. A. Wortham, regional director of PWA, and A. Stanley Llewellyn, of the American Legion. The Legion presented its plaque for distinguished service to Dr. Wilson as part of the ceremony. Preceding the dedication of the building, memorial tablets were unveiled honoring the memory of chairmen of the board of trustees and deans of the college since its founding in 1824.

TENNESSEE

Personal.—Dr. George W. Jackson, Western State Hospital, has been appointed health officer of Bedford County.——Dr. Roscoe Faulkner, Trenton, has been appointed health officer of Williamson County to succeed Dr. Don C. Peterson, Franklin, who has been appointed director of vital statistics in the state health department.——Dr. Benjamin F. Byrd, Nashville, has been appointed medical director of the National Life and Accident Insurance Company, Nashville, to succeed the late Dr. Rufus E. Fort.

Dr. Goodpasture Receives Alvarenga Prize.—The College of Physicians of Philadelphia awarded the Alvarenga Prize, July 14, to Dr. Ernest W. Goodpasture, professor of pathology, Vanderbilt University School of Medicine, Nashville, for his outstanding contributions to the knowledge of viruses. This prize was established by the will of Pedro

Francisco de Costa Alvarenga, Lisbon, Portugal, an associate fellow of the College of Physicians, to be awarded annually by the college on the anniversary of Alvarenga's death, July 14, 1883, to the author of the best memorial on any branch of medicine which may be deemed worthy of the prize.

WEST VIRGINIA

Society News.—Dr. James J. Joelson, Cleveland, addressed the medical societies of Monongalia, Marion and Harrison counties at a meeting in Morgantown, recently on "Tumors of the Adrenal Gland."——Dr. Henry H. Dixon, Portland, Ore., addressed the Kanawha Medical Society, Charleston, in May on management of anxiety states and care of the psychic components of organic disease.——Dr. Warren T. Vaughan, Richmond, Va., addressed the Fayette County Medical Society, Fayetteville, June 25, on practical phases of allergy.

Personal.—Dr. Norman G. Angstadt, Fayetteville, recently health officer of Hancock and Wetzel counties, has been appointed health officer of Fayette County. He succeeds Dr. Leon A. Dickerson, who resigned to join the staff of the state health department.——Dr. Albert M. Price, head of the division of communicable diseases in the state department of health, Charleston, has been appointed health officer of Kanawha County to succeed Dr. Turner E. Cato, who recently became health officer of Dade County, Fla.

Summer Postgraduate Courses.—The West Virginia State Medical Association and the West Virginia State Health Department are presenting courses in obstetrics and pediatrics in ten towns from July 15 to August 23. The speakers who will lecture on the circuit the first two weeks are Drs. Hugh J. Morgan, Nashville, Tenn., and Charles F. Mohr, Baltimore, one week each on "Diagnosis and Treatment of Cardiovascular Syphilis," and John H. Randall, Iowa City, "Obstetric Hemorrhages." The last three weeks Dr. Robert A. Lyon, Cincinnati, will lecture on pediatrics in five towns and Dr. Jay M. Arena, Durham, N. C., in the remaining five. The towns are Montgomery, Beckley, Logan, Welch, Lewisburg, Weirton, Moundsville, Terra Alta, Weston and Keyser.

GENERAL

Award for Study of Diseases of Chest.—The American Association for Thoracic Surgery awarded the first Rose Lampert Graff prize of $250 to Dr. Paul W. Gebauer, Cleveland, at its meeting in Cleveland in June for a paper on cancer of the lungs. Dr. Gebauer graduated from Western Reserve University School of Medicine, Cleveland, in 1933. The prize was given by the Rose Lampert Graff Foundation of Los Angeles, established in 1939 by Mr. and Mrs. Ellis Levy in memory of Mrs. Levy's mother. Dr. Jacob J. Singer, Los Angeles, is director of the fund. The foundation offers a similar prize through the American Association for Thoracic Surgery for 1941. Any one who wishes to submit a paper should send it to Dr. Richard H. Meade Jr., secretary, 2116 Pine Street, Philadelphia.

Awards in the Physicians' Art Exhibit.—Prizes awarded in the third annual exhibition of the American Physicians' Art Association during the annual session of the American Medical Association in New York, June 10-14, were as follows:

First prize, given by Dr. Max Thorek, Chicago, for the best work of art in the exhibit, to Yela E. Brichta, D.D.S., New York, for a plaster group, "Mother and Child."

Hoffman-La Roche Prize for the best oil, to Dr. Robert H. Kennicott, Los Angeles, for "Figure in Repose."

Prize given by Dr. Charles Homer Wheelon, Seattle, for oil showing highest creative ability, to Dr. William W. Wright, West Hartford, Conn., for "Polish New England."

Prize offered by John Wyeth and Brother for best water color, to Dr. John Groopman, New York, for "Fulton Dock."

Prize offered by G. D. Searle & Company, for best piece of sculpture, to Dr. Abraham L. Wolharst, New York, for "The Nazarene."

Prize offered by the *New York Physician* for best work by a physician in the metropolitan area, to Dr. Alfred Braun, New York, for an oil, "Girl with Muff."

Prize offered by Winthrop Chemical Company for photographic work, to Dr. James O. Fitzgerald Jr., Richmond, Va., for "Birches by the Brook."

Prize for best etching, to Dr. Josef Warkany, Cincinnati, for "November."

Appeal for Medical Supplies for England.—An urgent appeal for surgical instruments and hospital supplies to be sent to England has been issued by "Bundles for Britain," a volunteer organization licensed by the State Department to ship through the Allied Relief Fund directly to the British Red Cross. England is setting up large numbers of "subhospitals" and hospital bases throughout the country. Instruments and equipment, even if somewhat out of date, are desired. Urgent appeals have been made for bronchoscopes, esophagoscopes, sigmoidoscopes, cystoscopes, bladder retractors, intestinal clamps, forceps of various kinds and sizes, syringes, plaster shears, mouth gags and rubber sheeting. A detailed list will be sent to any one who wishes to help. The address of Bundles for Britain is 484 Park Avenue, New York.

Fellowships in the Medical Sciences.—Thirteen fellowships in the medical sciences, including five renewals, for study in the United States during the year 1940-1941, were awarded at the recent meeting of the Medical Fellowship Board of the National Research Council, Washington, D. C., of which Dr. Francis G. Blake, Sterling professor of medicine, Yale University School of Medicine, New Haven, Conn., is chairman. A list of the candidates and institutions where they are to work follows:

Dr. Reginald M. Archibald, Toronto, Ont., Rockefeller Institute for Medical Research.
Dr. Frederik B. Bang, Baltimore, Vanderbilt University, Nashville, Tenn.
Dr. Lindsay A. Beaton, Chicago, Northwestern University, Chicago.
Dr. Albert H. Coons, Boston, Harvard Medical School, Boston.
Dr. Joseph Russell Elkinton, Philadelphia, Yale.
Dr. Hugh W. Garol, San Francisco, Yale.
Arden Howell Jr., Ph.D. (renewal), Duke University, Durham, N. C.
Dr. Carl A. Moyer, Ann Arbor, Mich., Massachusetts General Hospital, Boston.
Dr. Abe Ravin, Denver (renewal), Harvard.
Joseph Shack, Ph.D. (renewal), John Hopkins University, Baltimore.
Dr. William M. Wallace, Boston (renewal), Harvard.
Richard J. Winzler, Ph.D. (renewal), Cornell University Medical College, New York.
Earl H. Wood, Ph.D., University of Pennsylvania, Philadelphia.

Special Society Elections.—Dr. William H. Guy, Pittsburgh, was elected president of the American Dermatological Society at the annual meeting in Colorado Springs in June. Dr. Harry R. Foerster, Milwaukee, is secretary. The 1941 meeting will be in New Orleans.——Dr. John L. Lattimore, Topeka, Kan., was made president-elect of the American Society of Clinical Pathologists at the annual meeting in New York in June. Dr. Armin V. St. George, New York, is president and Dr. Alfred S. Giordano, South Bend, Ind., is secretary. The 1941 meeting will be in Cleveland prior to the annual session of the American Medical Association.——Dr. Milton B. Cohen, Cleveland, was chosen president-elect of the American Society for the Study of Allergy at the annual meeting in New York, June 10-11, and Dr. Robert L. Benson, Portland, Ore., became president. Dr. Samuel M. Feinberg, Chicago, was elected vice president. Dr. James Harvey Black, Dallas, Texas, is secretary.——Dr. Benjamin Goldberg, Chicago, was named president-elect of the American College of Chest Physicians at the annual meeting in New York and Dr. John H. Peck, Oakdale, Iowa, was installed as president. Drs. J. Winthrop Peabody, Washington, D. C., and Mathew Jay Flipse, Miami, Fla., were elected vice presidents and Dr. Paul H. Holinger, Chicago, was elected secretary.

CANADA

Personal.—Dr. Alan Brown, professor of pediatrics, University of Toronto Faculty of Medicine, Toronto, has been made a fellow of the Royal College of Physicians of London (honoris causa).——Dr. Edward W. Archibald, emeritus professor of surgery, McGill University Faculty of Medicine, Montreal, and Dr. C. L. Pierre Masson, professor of pathological anatomy, University of Montreal Faculty of Medicine, received honorary degrees of doctor of science at the recent convocation of McGill University.

CORRECTIONS

Dr. Rea will Continue Teaching.—In THE JOURNAL, June 29, page 2576, it was reported that Dr. Charles E. Rea had resigned his position as assistant professor of surgery at the University of Minnesota Medical School to enter private practice in St. Paul. Dr. Rea writes that he resigned from full time teaching but will continue on a part time basis.

Paper Presented by Dr. Rieser.—In a news item in THE JOURNAL, July 6, page 65, reporting a district meeting in Georgia a paper on "Etiologic Factors of Human Sterility in the Male" was listed as having been given by Dr. Robert Norton, Rome, Ga. This should have been credited to Dr. Charles Rieser, Atlanta. Dr. Norton discussed the preceding paper on the program.

Intravenous Anesthesia.—Under the title "Intravenous Anesthesia" in Queries and Minor Notes in THE JOURNAL, July 6, page 73, in the last sentence of the first paragraph the word "cyanotic" should have been "burned." In the first sentence of the second paragraph the dose should have read "1 gram" (not "1 grain") and in the last sentence of the first paragraph also "1 gram" (not "1 grain").

Foreign Letters

LONDON

(From Our Regular Correspondent)

June 22, 1940.

Improvement in Respirators for Use in Gas Attacks

So far the Germans appear to have made no use of their innovation of the last war—the use of poison gas. But we are taking no risks. Respirators have been issued to the troops and also to every civilian in the country. In these respirators activated carbon is the agent for the absorption of poisonous gases and there is a pad of wool and asbestos for the absorption of smokes, but this is evidently thought not to be quite sufficient. A new filter is therefore being added to the existing respirators to increase their efficiency against smokes. It is a shallow tin box which is affixed by adhesive tape to the millions of respirators already issued to the civilian population. The work is being done by the air raid wardens throughout the country. A description of the mode of action of the new filter has not been published.

The First Wartime Pharmacopeia

The first wartime addition to the British pharmacopeia, published under the direction of the General Medical Council, contains ten new monographs and amends five of those of the last pharmacopeia, which was published in 1932 and had an addendum in 1936. The principal change in the new publication, of which the official title is "Second Addition to the British Pharmacopeia, 1932" is cod liver oil substitute. Nine of the ten new monographs are due to the shortage of oil extracted from the cod's liver, which is a result of the war. Formulas are given for an emulsion containing 50 per cent of cod liver oil and for an "emulsion of vitaminized oil devised to be equivalent as regards vitamins to the emulsion of cod liver oil." It consists of vitamins A and D dissolved in peanut oil or other suitable vegetable oils. Alternatively it may consist of a suitable fish liver oil or blend of fish liver oils. The ninth monograph on oils containing vitamins deals with halibut liver oil, for which a standard is now laid down. The tenth new monograph gives a formula for tetanus toxoid. The five monographs which are amended deal with liniment of camphor hydrous ointment, compound ointment of mercury, ointment of capsicum and ointment of tannic acid.

Effect of the War on Drug Supplies

The Netherlands, the Netherland colonies and Belgium are important sources of drugs used in all countries, the supply of which is now cut off or reduced. The most important drug to be affected is quinine, for its world market is controlled from Amsterdam and more than 95 per cent of the cinchona bark used in its production comes from the Netherland island of Java. Fortunately it seems that ample reserves of the alkaloid are in the military stores of the Allies and sufficient for civilian needs are warehoused in England. The market for caffeine and theobromine is also dominated by Netherland production; the former is extracted from tea and coffee waste and the latter from cocoa husk. A by-product of the manufacture of cocoa, cacao butter, is also an important commodity of Netherland commerce. So also are the oils of caraway seed and nutmeg and gum benzoin, of which the tree Styrax benzoin grows in Sumatra. The best variety of aloes is produced in Netherland islands. In Belgium many vegetable drugs, such as valerian and dandelion roots, marsh mallow and henbane, are cultivated. Since the war has placed obstacles in the way of trade in these substances from middle Europe, dealers have been able to satisfy some of their requirements by transferring orders to Belgium growers. Now of course this source also is affected.

Emergency Food Plans

The approach of the battlefield to our shores has led to new precautions. In a previous letter it was stated that the Ministry of Health had decentralized its administration by dividing the country into districts, each with its own center. This was done because of the possible effects of an attack on London from the air. A similar course has now been taken with regard to food, the distribution and sale of which has been controlled by the government since the outbreak of the war. In order to insure distribution in case of emergency, the country has been divided into seventeen food areas in which in time of crisis officers of the Ministry of Food will assume supreme control if communications break down. Beyond this there is a further division of the country into 800 self-supporting areas, each with its own depot. The minister of food, Lord Woolton, describes the scheme as a revolution in the dispersal of foodstuffs and one which should prevent people from seeking to store unduly large quantities of food in their homes. Each of the 800 little areas would have enough food for a few weeks without any help from the outside. In times of emergency there would be no long journeys with food supplies from the ports. The main roads would have to be kept as free as possible for military movements.

Control of Cerebrospinal Fever Among Troops

The War Office has issued a memorandum on the measures to be taken to control cerebrospinal fever among the troops. If a suspected case occurs, the medical officer must at once notify it and telephone or telegraph to the pathologist in charge of the laboratory allotted to the area and make arrangements for the isolation and treatment of the case and for isolation of contacts pending the arrival of the pathologist. For prevention, overcrowding must be avoided. In sleeping quarters there should be an interval of at least 6 feet between the centers of adjacent beds. In war this may not be possible and then at least 2½ feet must be maintained. If the distance is less than 3½ feet, every alternate bed must be turned round, so that each man sleeps with his head opposite his neighbor's feet.

For treatment, sulfanilamide or sulfapyridine is recommended. As a rule only one of these should be administered, but if there is intolerance, as shown by nausea, vomiting, depression or insomnia, a change to the other drug may cause the symptoms to disappear. The dosage should be sufficient to maintain in the cerebrospinal fluid a concentration of 5 mg. per hundred cubic centimeters for three days and a slightly lower one for a further five or six days. As long as these drugs are being administered, the intake of fluids should be about 4 pints (2 liters) daily so as to maintain a reasonable balance between blood concentration and urinary excretion. The total dose in the twenty-four hours should be 8 Gm., and in extreme cases a maximum of 10 Gm. Spacing is important. The drug should be given every four hours night and day. At the beginning half the twenty-four hour dose should be given in the first two doses. After this an equal dose should be given every four hours. After two and one-half to three days the dose over the next six days should be gradually reduced to 2 or 3 Gm. daily. To prevent recurrence the drug should be administered for some days after disappearance of the symptoms, but normally the total period need not exceed nine days.

The Prevention of Diphtheria

The Royal College of Physicians has passed a resolution urging the Ministry of Health to encourage the immunization against diphtheria of children in the age group 1-15 in view of the fact that there has been no abatement in the incidence or permanent reduction in the mortality since the early years of the century. The cost of prophylactics should not be allowed to interfere with schemes which would reduce the incidence of diphtheria. Where outbreaks occur, advantage should be taken of the Emergency Laboratory Service to help to control them.

The college also draws the attention of the ministry to the fact that children brought up on pasteurized milk in the towns have since their evacuation to the country, because of the danger of air raids, been receiving raw milk. Arrangements should be made to secure supplies of pasteurized milk in all areas where there are numbers of children to demand it. Further, physicians should advise parents of the risks of infection in consuming raw milk and the value of pasteurization or boiling in removing them.

ITALY

(From Our Regular Correspondent)

June 15, 1940.

Obligatory Vaccination Against Diphtheria

A recent law makes antidiphtheric vaccination obligatory for children between 2 and 10 years of age. Communities will have centers for free administration of the vaccines, which will be provided by the municipalities. The child's family can select the physician it wants for carrying on vaccination. Physicians will report vaccinations performed to the proper authorities in the department of hygiene in the community, who will register the report in a record book and send a certificate to the family through the physician. The certificate is to be shown when the child enters school. If the child has not been vaccinated against smallpox he is given anti-smallpox vaccination just before administration of the first antidiphtheric injection. The results of the anti-smallpox vaccination are controlled twenty-one days after administration of anti-smallpox vaccine and then the second antidiphtheric injection is done. Children provided with medical certificates showing that they have had diphtheria or that they suffer from asthma or from renal or cutaneous diseases are excluded by the law from obligatory antidiphtheric vaccination.

Medical Meeting

The Medical Society of Libya recently met in Tripoli. Professor Ciotola spoke on the epidemiology of exanthematic typhus and on the satisfactory results of vaccines, which are administered according to Weil's method for the prevention of the disease. Professor Casati reported satisfactory results with sulfanilamide in about 400 cases of conjunctivitis from streptococci with grave corneal complications. The drug produced rapid and lasting satisfactory results in corneal complications of trachoma and scanty results in conjunctivitis of the Koch-Weeks type. Drs. Nastasi and Azzarello reported satisfactory results from flying at altitudes of between 2,500 and 3,500 meters for children with whooping cough. The attacks of cough stopped immediately in 50 per cent of the cases. The speakers believe that a factor which up to now is unknown is present during flying at altitudes and that it assumes a special role on the nervous pathologic stimulation which causes cough. Dr. Bravi reviewed the literature on the treatment of epilepsy. He used dilantin sodium in the treatment of symptomatic epilepsy. He concluded that in grave forms of the disease the crises stop for the first thirty or forty-five days after administration of the treatment. Then they reappear at long intervals. In forms of moderate acuteness of the disease the crises seem to be controlled.

Operations and the Blood Pressure

Professor Bassi of Pavia, in a lecture recently delivered to the Accademia Medico-Chirurgica of that city, reported observations on forty patients who had operations under general ether anesthesia or else local procaine hydrochloride anesthesia. He determined the blood pressure before the operation and several times a day for the first ten days after the operation. The arterial blood pressure showed moderate upward oscillations in 50 per cent of the patients who had operations with general ether anesthesia and moderate downward oscillations in the remaining patients. In the larger number of patients who had local anesthesia the arterial blood pressure increased shortly after the operation and diminished during the following days. The venous blood pressure diminished in the majority of cases in the whole group. Moderate lowering began a few hours after the operation and progressed during the following days. The venous blood pressure showed no relation to the variations of the pulse and the temperature. Often the pressure diminished in the presence of frequent respiration. The behavior of the venous blood pressure paralleled that of the arterial blood pressure in half the number of cases. The velocity of circulation showed moderate diminution in the majority of cases of general ether anesthesia. It moderately increased during the first few hours after local anesthesia and then it diminished for the following few days. The most observable alterations appeared within twenty to thirty hours after the operation. The speaker used the apparatus of Alestra and Ruffini for studying the behavior of the venous pressure and Hirschsohn and Maendl's method with calcium chloride for determining the velocity of circulation.

Congenital Malformation of Esophagus

Professor Cajano, in a lecture recently delivered to the Accademia delle Scienze Mediche e Chirurgiche of Naples, reported observations on congenital malformation of the esophagus in newborn infants, which were found in two cases out of a total number of 900 necropsies. There was atresia of the esophagus between the upper and middle thirds of the structure in both cases. Esophagotracheal fistula was present in one case and stenosis of the cardiac orifice in the other case. The speaker said that esophageal malformations are rare. The literature from 1670 to the present contains about 300 case reports. The most frequent type (80 per cent of the reported cases) consists of atresia of the esophagus and esophagotracheal fistula. The signs of esophageal atresia are characteristic. Seromucous liquid is constantly eliminated from the mouth, the attacks of suffocation are frequent and deglutition is impossible. The prognosis is poor. Not even surgery has succeeded. None of the theories on the etiology and pathogenesis of the condition are clear and precise. The theories more frequently given are those concerning early embryonal malformation with abnormal hyperdevelopment of the cardiac segment in the presence of abnormal blood vessels or else the persistence of physiologic epithelial occlusion at the esophagus. The speaker believes that the main factor is a primary deviation of embryonic development at the cephalic portion of the primary intestine, at which point the tracheoesophageal segment develops. The cause of the deviation is unknown. The speaker carried on serial microscopic examinations of the atresic segment in his cases and found neither actual, local or general conditions in relation to the cause of atresia nor signs of any causing condition in the past.

Marriages

JOHN SAMUEL SLATE, Winston-Salem, N. C., to Miss Lora Mae La Foy of Anderson, S. C., May 18.

OLIVER EDMONDS TURNER, Pittsburgh, to Miss Dorothy Elizabeth Huber of Philadelphia, June 14.

VERNON W. TAYLOR JR., Oxford, N. C., to Miss Vida Grace Babb of Johnstown, Pa., June 1.

ERNEST FREDERICK BRIGHT, Cleveland, to Miss Elizabeth Thompson Morse of Boston, May 16.

WELDON TROEH ROSS, McMinnville, Ore., to Miss Waunita Luke of Holdredge, Neb., July 6.

ROBERT SHEARER HELLMANN to Miss Mary Catherine Elliott, both of Jackson, Tenn., June 8.

WILLIS W. BOWERS JR., Granite City, Ill., to Miss Lois Eddy of Kenton, Ohio, June 1.

WILLIAM EDWARD STOREY to Miss Virginia Johnson, both of Columbus, Ga., June 5.

JAMES THOMAS GREEN to Miss Mary Wright Shand, both of Columbia, S. C., June 4.

Deaths

Austin Albert Hayden ✠ Secretary of the Board of Trustees of the American Medical Association, a distinguished worker in the field of ophthalmology and otolaryngology, died in Chicago, July 10, of coronary thrombosis.

Dr. Hayden was born in Shullsburg, Wis., Oct. 15, 1881. His premedical education was received at Creighton University in Omaha and at the University of Chicago. He received his M.D. degree from Rush Medical College in 1904, served his internship in St. Elizabeth's Hospital and served also as intern in St. Anne's Hospital. He was instructor in ophthalmology and did graduate work at the New York Post-Graduate Medical School from 1906 to 1908, and then was instructor in ophthalmology at Rush from 1908 to 1916.

In his professional life Dr. Hayden was active in the work of many medical organizations. He was a fellow of the American College of Surgeons, a member of the American Otological Society, a former president of the Chicago Laryngological and Otological Society and of the Chicago Medical Society. He was also a member of the Chicago Ophthalmological Society, the American Academy of Ophthalmology and Otolaryngology, the American Laryngological, Rhinological and Otological Society, a former president of the American Association of Railway Surgeons and a member of the Institute of Medicine and the Society of Medical History of Chicago.

AUSTIN ALBERT HAYDEN, M.D.
1881-1940

In more recent years he had given much attention to the problems of those who are hard of hearing and had served as president of the Chicago League for the Hard of Hearing and of the American Federation of Organizations for the Hard of Hearing. He had also contributed greatly to the development of hearing devices and recently published contributions on this subject both in scientific periodicals and in such publications for the layman as *Hygeia* and the *Reader's Digest*.

In the American Medical Association Dr. Hayden had served as treasurer from 1922 to 1933 and since 1933 he had been Secretary of the Board of Trustees. He was devoted to his work for organized medicine, giving much of his time also to the recently organized National Physicians' Committee, of which he was secretary.

At the meeting of the American Medical Association just held in New York he worked many hours during the day and night in his official capacities not only on the Board of Trustees and in the work of the House of Delegates but also in charge of entertainment during the session. He became ill following his return from the meeting and had been almost constantly in the hospital since that date. Dr. Hayden was known to his friends for his intense activity, his constant courtesy, his genial friendship and particularly his leadership in medical advancement. The debt of organized medicine to men of his type who give so freely of themselves for the common good cannot be too greatly recognized.

Samuel Horton Brown ✠ Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1899; member of the American Academy of Ophthalmology and Otolaryngology; formerly member of the State Council for the Blind; ophthalmologist to the Mount Sinai Hospital, St. Luke's and Children's Hospital and the American Hospital for Diseases of the Stomach; editor of the seventh, eighth and ninth editions, from 1904 to 1906, of "Hughes' Practice of Medicine"; associate editor of the "American Year Book of Medicine and Surgery," 1904-1905; author of "Eczema, Its Causes, Diagnosis and Treatment," published in 1906; author, with William C. Posey, of "History of Will's Hospital," published in 1931; editor of the *Weekly Roster and Medical Digest*, official organ of the Philadelphia County Medical Society; aged 61; died, June 12.

Claude Thomas Uren ✠ Omaha; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1910; professor of otology and rhinology at the Creighton University School of Medicine; past president of the Omaha-Douglas County Medical Society; member of the American Academy of Ophthalmology and Oto-Laryngology; American Laryngological, Rhinological and Otological Society and the American Otological Society, Inc.; served during the World War; fellow of the American College of Surgeons; attending otolaryngologist to St. Joseph's and Douglas County hospitals; aged 52; died, May 16, of cerebral hemorrhage.

George Gray Sears, Boston; Harvard Medical School, Boston, 1885; member of the Massachusetts Medical Society and the Association of American Physicians; professor emeritus of clinical medicine at his alma mater and at various times instructor, assistant professor of clinical medicine, clinical professor and professor of clinical medicine; visiting physician, Boston City Hospital, from 1902 to 1919, trustee since 1918 and consulting physician since 1919; trustee of the Forsythe Dental Infirmary since 1924; vice president of the Boston Medical Library from 1928 to 1935; aged 80; died, May 28.

Martin William Peck, Boston; Harvard Medical School, Boston, 1915; for many years instructor of psychiatry at his alma mater; member of the American Psychoanalytic Association, American Psychiatric Association and the New England Society of Psychiatry; past president of the Boston Psychoanalytic Society; served during the World War; formerly on the staffs of the Massachusetts General Hospital and the Boston Psychopathic Hospital; author of "The Meaning of Psycho-Analysis"; a trustee of the Boston Psychoanalytic Institute; aged 59, died, May 7, of a self-inflicted bullet wound.

Hunter Robb, Burlington, N. J.; University of Pennsylvania Department of Medicine, Philadelphia, 1884; associate in gynecology at the Johns Hopkins University School of Medicine, Baltimore, from 1889 to 1894; formerly professor of gynecology at the Western Reserve University School of Medicine, Cleveland; at one time visiting gynecologist to the Lakeside Hospital, Cleveland; fellow of the American College of Surgeons; served during the World War; author of "Aseptic Surgical Technique," published in 1894; aged 76; died, May 15, of pneumonia.

William Harvey Smith, Winnipeg, Man., Canada; McGill University Faculty of Medicine, Montreal, Que., 1892; professor emeritus of ophthalmology at the University of Manitoba Faculty of Medicine; past president of the British Medical Association, Canadian Medical Association, Manitoba Medical Association, College of Physicians and Surgeons of Manitoba and the Winnipeg Medical Society; fellow of the American College of Surgeons; honorary consultant, Winnipeg General Hospital; aged 71; died, May 15, of carcinoma of the prostate.

William Reginald Leonard Hathaway, Milo, Maine; Medical School of Maine, Portland, 1901; member of the Maine Medical Association; past president of the Piscataquis County Medical Society; for many years member of the school board of Milo and school physician; formerly member of the state house of representatives and state senate; aged 62; died, May 26, of chronic nephritis and hypertensive heart disease.

Baldwin Mann, Collins, N. Y.; Johns Hopkins University School of Medicine, Baltimore, 1909; formerly assistant professor of medicine and therapeutics at the University of Buffalo School of Medicine; past president of the Medical Society of the County of Erie; served during the World War; at one time on the staff of the Buffalo General Hospital; aged 57; died, May 9, in Canandaigua.

Summerfield Moon Taylor, Austin, Texas; University of Texas School of Medicine, Galveston, 1913; member of the State Medical Association of Texas; fellow of the American College of Surgeons; on the staffs of the Seton Infirmary, Brackenridge Hospital and St. David's Hospital and the Texas Deaf, Dumb and Blind Institute; aged 50; died, May 27, of coronary artery occlusion.

Charles Julius Plonske ✠ Faribault, Minn.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1905; president of the Rice County Medical Society; on the staffs of St. Lucas Evangelical Deaconess Hospital and the Minnesota School for Feebleminded; aged 69; died, May 16, of carcinoma of the lung with metastasis to the cerebrum.

Forrest Foster Slyfield, Duluth, Minn.; Rush Medical College, Chicago, 1911; member of the Minnesota State Medical Association; on the staffs of the Miller Memorial Hospital, Webber Hospital, St. Luke's Hospital and St. Mary's Hospital; aged 53; died, May 2, of coronary thrombosis.

David Becker Pindar, Hoboken, N. J.; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1889; formerly member of the city board of health; school physician; for many years on the staff of St. Mary's Hospital; aged 74; died, May 5, of septicemia.

Charles Espy Mordoff, Oakland, Calif.; College of Physicians and Surgeons, Los Angeles, 1910; member of the California Medical Association; served during the World War; aged 56; died, May 7, in the Providence Hospital of cerebral hemorrhage, myocarditis and hypertension.

Charles Homer Bair ✠ Wilmerding, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1904; public school physician and president of the board of health; aged 64; died, May 20, in the Western Pennsylvania Hospital, Pittsburgh, of chronic nephritis and acute cholecystitis.

Clarence Nicholas Sonnenburg, Sheboygan, Wis.; Marquette University School of Medicine, Milwaukee, 1915; member of the State Medical Society of Wisconsin; served during the World War; formerly county coroner; aged 48; died, May 5, in St. Nicholas Hospital.

Daniel Irwin Jamison, Pittsburgh; Western Pennsylvania Medical College, Pittsburgh, 1897; member of the Medical Society of the State of Pennsylvania; aged 70; died, May 17, in the Shadyside Hospital of mesenteric thrombosis and lobar pneumonia.

Tubal J. Ziegler, Richmond Hill, N. Y.; Cincinnati College of Medicine and Surgery, 1887; at one time adjunct professor to the chair of materia medica and therapeutics at the Chattanooga (Tenn.) Medical College; aged 82; died, May 27, of coronary thrombosis.

Bergen Fred Illston, Utica, N. Y.; University of Buffalo School of Medicine, 1901; served during the World War; formerly coroner of Jamestown; aged 61; died, May 15, in the Veterans Administration Facility, Batavia, of carcinoma of the colon.

Eva Charlotte Reid, San Francisco; Cornell University Medical College, New York, 1907; formerly associate clinical professor of psychiatry at the University of California Medical School; served during the World War; aged 66; died, May 1.

Isidore Daniel Haskell, Newark, N. J.; Vanderbilt University School of Medicine, Nashville, Tenn., 1912; served during the World War; aged 53; died, May 25, in the Beth Israel Hospital of arteriosclerosis and heart disease.

Bert Lee Stollar ✠ Fayette City, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1906; served during the World War; aged 56; died, May 5, in the Mercy Hospital, Pittsburgh, of acute staphylococcic endocarditis.

John Read, Los Angeles; University of Pennsylvania Department of Medicine, Philadelphia, 1904; member of the Medical Society of the State of Pennsylvania; aged 60; died, May 2, in Glendale, Calif., of bronchial asthma.

Henry Ernest Chaput, Chicopee Falls, Mass.; School of Medicine and Surgery of Montreal, 1894; aged 70; died, May 4, in the Women's Homeopathic Hospital, Philadelphia, of hypertrophy of the prostate and cardiorenal disease.

Herbert Ausburn Rodenbaugh, Barberton, Ohio; Ohio Medical University, Columbus, 1902; member of the Ohio State Medical Association; served during the World War; aged 65; died, May 27, of acute myocarditis.

Herbert Waldo Emsheimer, Los Angeles; Columbia University College of Physicians and Surgeons, New York, 1909; served during the World War; on the staff of the Cedars of Lebanon Hospital; aged 54; died, May 20.

Murray Elliott Ramsey, Westfield, N. J.; Medical College of Ohio, Cincinnati, 1889; formerly member of the board of education; aged 72; died, May 9, in the Muhlenberg Hospital, Plainfield, of arteriosclerosis and nephritis.

James Allen Rhodes, Horn Lake, Miss.; Memphis (Tenn.) Hospital Medical College, 1911; member of the Mississippi State Medical Association; for many years postmaster; aged 68; died, May 31, of cirrhosis of the liver.

John Gerard Sweeney, Hingham, Mass.; Tufts College Medical School, Boston, 1916; formerly medical examiner of the fifth Plymouth district; aged 45; was found dead, May 18, of a skull fracture received in a fall.

William C. Raughley ✠ Berlin, N. J.; University of Pennsylvania Department of Medicine, Philadelphia, 1884; aged 75; died, May 11, in the Cooper Hospital, Camden, of posterior coronary artery occlusion.

John Shields Taugher, Waukesha, Wis.; Marquette University School of Medicine, Milwaukee, 1933; member of the State Medical Society of Wisconsin; aged 33; died, May 18, in an automobile accident.

William Allen Raiman ✠ Swarthmore, Pa.; Medico-Chirurgical College of Philadelphia, 1905; aged 60; died, May 18, in the Temple University Hospital, Philadelphia, of diverticulosis and peritonitis.

Thomas Jacob Coble, Shelbyville, Tenn.; Vanderbilt University School of Medicine, Nashville, 1898; member of the Tennessee State Medical Association; aged 69; died, May 19, of coronary thrombosis.

James V. May, Port Gibson, Miss.; Louisville (Ky.) Medical College, 1903; member of the Mississippi State Medical Association; aged 64; died, May 9, of chronic myocarditis and adhesive pericarditis.

Henry Osborn Carhart, Blairstown, N. J.; Jefferson Medical College of Philadelphia, 1886; medical examiner for the state highway department; formerly state senator; aged 76; died, May 22.

John S. Yates ✠ Rosenberg, Texas; University of Texas School of Medicine, Galveston, 1903; on the staff of the Fort Bend Hospital; aged 64; died, April 6, of heart disease and chronic nephritis.

Percy Lee Hamilton ✠ Chico, Calif.; California Medical College, San Francisco, 1896; past president of the Butte County Medical Society; aged 65; died, May 9, of carcinoma of the rectum.

James Crittington Parrott, Natchitoches, La.; Tulane University of Louisiana School of Medicine, New Orleans, 1903; member of the Louisiana State Medical Society; aged 66; died, May 16, of coronary thrombosis.

August Friederick Gustav Paetzel, Sharon, Pa.; Maryland Medical College, Baltimore, 1907; aged 68; died, May 31, in a hospital at Mercer, of cerebral hemorrhage and chronic myocarditis.

Benjamin F. Rynerson, Prairieton, Ind.; University of Louisville (Ky.) Medical Department, 1888; aged 82; died, May 13, in the Union Hospital, Terre Haute, of chronic nephritis.

Fred Merritt Stiles, Waltham, Mass.; Medical School of Maine, Portland, 1890; member of the Massachusetts Medical Society; aged 76; died, May 10, of acute coronary thrombosis.

John Cleveland Luster, Davis, Okla.; Keokuk (Iowa) Medical College, 1898; member of the Oklahoma State Medical Association; aged 64; died, May 17, of heart disease.

Emily Jane Ingram Stephens, Telford, Pa.; Woman's Medical College of Pennsylvania, Philadelphia, 1883; aged 83; died, May 26, in the Grand View Hospital, Sellersville.

Benjamin Stetson, Oakland, Calif.; Bennett College of Eclectic Medicine and Surgery, Chicago, 1890; aged 79; died, May 22, of coronary occlusion and chronic myocarditis.

William Henry Pennington, Mineral Wells, Texas; Missouri Medical College, St. Louis, 1876; aged 84; died, May 9, in the Nazareth Hospital of diabetic acidosis.

Jefferson D. Hammett, Huntsville, Mo.; University of Pennsylvania Department of Medicine, Philadelphia, 1870; aged 92; died, May 12, of chronic myocarditis.

Charles Marion Tinney, Los Angeles; Kansas City Medical College, 1900; served during the World War; aged 60; died, May 18, in the California Lutheran Hospital.

John Henry Bell, Hamilton, Ont., Canada; Trinity Medical College, Toronto, and Queen's University Faculty of Medicine, Kingston, 1890; aged 73; died, May 8.

Columbus H. McCuistion, Valley View, Texas; American Medical College, St. Louis, 1899; aged 77; died, May 16, of coronary heart disease.

William H. Thompson ✠ Winterset, Iowa; Jefferson Medical College of Philadelphia, 1884; aged 83; died, May 16, of cerebral thrombosis.

George Bigler Ehrman, Miami Beach, Fla.; Pulte Medical College, Cincinnati, 1883; aged 81; died, May 23, of pneumonia and uremia.

Irwin McMurchie Lloyd, Sault Ste Marie, Ont., Canada; University of Toronto Faculty of Medicine, 1918; aged 43; died, May 9.

Benjamin F. P. Johnston, Rosebush, Mich.; Detroit College of Medicine, 1895; aged 68; died, May 31, of coronary thrombosis.

Bureau of Investigation

A "HAIR COLOR RESTORER" AND A "HAIR GROWER" FOUND FRAUDULENT

Dermo-Cosmetic Products Co. Debarred from the Mails

"Hair color restorers" were widely advertised until the Food and Drug Administration, which enforces the Food, Drug and Cosmetic Act, notified manufacturers of such products that this designation would be considered under the act as false and misleading. Most such color restorers apparently were sold at cosmetic counters rather than through the mails. Within the past year, however, the Post Office Department has closed the mails to a New York concern that put out such a product along with a "dandruff lotion."

According to the memorandum prepared on this case by Hon. Vincent M. Miles, Solicitor for the department, the firm in question did business under the names Dermo Co. and Dermo-Cosmetic Products Co. The business was run by a Joseph Kesler and his wife, Anne Kesler, apparently also known as Anne Kaye. They advertised in various publications, puffing the alleged powers of their "Grey-X" and "Hair-Giene."

Some of the advertisements for Grey-X did not mention the product by name—for example:

GRAY HAIR disappears gradually, natural looking effect; money back guarantee. Praised by thousands. $1.00 bottle. Free Booklet. DERMO CO. Dept. G. S. 1465 Bway, N. Y. C.

Those who wrote for particulars received circulars containing such preposterous claims as:

Natural Color RESTORED (Does NOT dye the hair) . . . A Sure Preparation to Restore Gray Hair to Its Original, Natural Color. Science now proclaims that YOUR HAIR NEVER NEED BE GRAY. This wonderful new preparation imparts to grey or white hair, a perfectly natural color from light blonde to the most intense black. . . . LOOK 15 TO 20 YEARS YOUNGER IMMEDIATELY—Youth and Beauty RESTORED. A TONIC—NOT A DYE. Good for Hair and Scalp. Effective against Dandruff and other Skin irritations. Guaranteed to restore original color. Equally effective for men and women. . . . GREY-X, the new and positive treatment for gray hair. . . . You can hold on to youth and beauty with GREY-X. The transformation is so complete, perfect and natural appearing that your most intimate friends will never detect the use of GREY-X. . . . It is so different. Remember, this preparation GREY-X is not like a quick acting hair dye. You use it like a hair tonic.

Statements made by the promoters of Grey-X to the Post Office Inspector in this case and substantiated by analysis made by government chemists revealed that Grey-X was a mixture of lead acetate, sulfur, glycerin, rose water, distilled water and perfume. Judge Miles's memorandum pointed out that, despite the promoters' representation that Grey-X "does not 'dye' the hair," expert medical evidence showed that it was, in fact, "an ordinary artificial dye of the slow-acting type" and would not "restore grey or white hair to its 'natural' color as claimed" but would "merely dye it a dull, metallic and unnatural black, the intensity of the shade varying slightly in accordance with the amount of the product applied." The expert evidence further brought out "that the lead acetate contained in the preparation may be absorbed in the sebaceous glands of the scalp with dangerous results to the user."

Apparently this concern's other product, "Hair-Giene," also was advertised without mention of its name, as follows:

HAIR TROUBLE-DANDRUFF Write for Free booklet HC endorsed by physician tells how to correct and relieve all scalp conditions; dandruff, patchy baldness, etc. Dermo Co., 1465 Broadway N. Y. C.

Those who answered the advertisement received circulars reading in part:

YOUR HAIR WILL GROW IF TREATED PROPERLY. "HAIR-GIENE" THE ANTISEPTIC LOTION For the HAIR & SCALP Ends Dandruff Worries! Checks Excessive Falling Hair. Promotes the Growth of New Hair. . . . This wonderful hair and scalp lotion is the result of many years of research and experimentation. It has been used successfully and exclusively by one of the leading Hair and Scalp institutions in New York City on thousands of men and women. Now, for the first time it is being offered direct to the public for aid in correcting local hair and scalp disorders such as dandruff, excessive falling hair, dry, itching scalp and patchy baldness. "HAIR-GIENE" is antiseptic in action, stimulating and a fine scalp conditioner and hair dressing for men and women. . . . It is the ideal all purpose hair and scalp lotion—for the correction and treatment of all local hair and scalp disorders. It is absolutely different than any hair and scalp products in the country. Contains NO ALCOHOL or any injurious ingredients.

Information from the company itself, supplemented by the work of the government chemists, brought out that the ingredients of Hair-Giene were salicylic acid, sulfur, quinine hydrochloride, tinctures of pilocarpine, mullein and cantharides, olive oil, shale oil, "perfumed oil," thymol, iodine and water.

The Solicitor's memorandum on this case commented in part that expert medical evidence showed that, although Hair-Giene when used as directed would act as a counterirritant, rubefacient and lubricant and might bring about a temporarily increased flow of blood to the normal scalp, it could not cause a supply of blood to reach the obstructed papillae; and that in some cases where the blood vessels are not completely obstructed or the papillae altogether atrophied the preparation may produce the growth of down or "fuzz" that cannot be considered normal hair. The medical evidence also showed that though in lubricating the scalp Hair-Giene might tend to relieve itching due to dryness it would not overcome other causes of itching scalp such as ringworm or eczema but instead might add to the deposit of "scruff" and increase any infection present.

For these reasons and the misrepresentations made concerning Grey-X the evidence was declared to show that the promotion of this business was a scheme for obtaining money through the mails by means of false and fraudulent pretenses, representations and promises, and on Sept. 22, 1939, a fraud order was issued against Dermo Co., Dermo-Cosmetic Products Co., Dermo Cosmetic Products Co., Joseph Kesler, Manager, Anne Kay, and their officers and agents as such, at New York.

It is interesting to note that another government agency, the Federal Trade Commission, also had taken action against this business. On April 29, 1939, the Commission announced that "Anne Kesler, formerly trading as Dermo-Cosmetic Products Co., and Joseph Kesler, her agent, and present owner of preparation designated 'Grey-X'" had agreed "to cease representing that use of their product will permanently restore gray hair to its natural color, keep the scalp healthy, eradicate dandruff, or promote the growth of hair. They also agree to cease representing that the product is a French discovery, is not a dye, and to discontinue otherwise making any misleading or untrue statement as to its composition."

Since three federal agencies have objected, either specifically or generally, to naming such products "hair color restorers," it should be self evident that in future promotions such items should be called hair dyes!

VARIOUS "SEX" FRAUDS—II

In the past year the Post Office Department has closed the mails to additional frauds of the sexual type. These frauds make their appeal to a class of individuals lacking in ordinary intelligence. Some of them appeal only to the feebleminded or at least completely unintelligent individuals, while others, including impotence "cures," have a wider, but only slightly higher class, clientele.

For these reasons the Bureau of Investigation is publishing only the briefest outline of Post Office fraud orders of this type which have appeared in the last year or so.

These are named in the following list with the number designation of the fraud order, the date of issuance, the name of the product and its promoters, with its description, and a list of ingredients, if known:

No. 13622, Dec. 6, 1939, (name of treatment not reported); F. J. Schreiber, Pittsburg, Kan.; blue pellets for "youthful pep": phosphates, sulfates, chlorides of sodium and potassium; small amounts of zinc and iron; petrolatum (0.044 Gm.) and strychnine and yohimbine (0.0015 Gm.) per tablet; white tablets for "prostate sufferers": methenamine (5.18 grains per tablet) with a little starch.

No. 13625, Dec. 27, 1939, "Vigotabs," Dee Company, Chicago; for sexual weakness: essentially damiana, with zinc phosphide (one-twelfth grain), strychnine (0.023 grain) and anhydrous ferric oxide (one-twelfth grain) per tablet; "Bladotabs" (Dee Company, Chicago), for kidney and bladder troubles: plant material including cubebs, sandalwood, copaiba, Venice turpentine and one-twentieth grain of exsiccated ferrous sulfate per tablet.

No. 13631, Dec. 29, 1939, "Vita-Male"; The Mason Products Company of California and The Mason Laboratories of California, Los Angeles; for sexual debility, sterility, glandular disturbances and some other things;

in each tablet 7 grains of seaweed, which contains small amounts of iodine, sodium potassium, calcium, magnesium, iron, sulfur, chlorine and phosphorus.

No. 13689, Jan. 19, 1940, "Jermol Perles"; Interstate Health Products, New York; claiming that loss of reproductive powers, premature old age, abortion in females, suckling paralysis in infants, improper development of boys and girls, and lowered vitality [loss of] "zest," "zip" and "pep" are due solely to vitamin E deficiency, and that their product which contained wheat germ oil would relieve these conditions; 2 minims of wheat germ oil to each "perle."

No. 14171, May 27, 1940, "Glandex"; L. H. Paul and Hollywood Hygienic Products, Hollywood, Calif.; "sex rejuvenator"; in each tablet about one-sixth grain of thyroid, a "considerable amount" of protein, and "a very small amount" of iodine, with calcium oxide and phosphate. Paul previously had put out an essentially similar product, operating as "Vitalife Laboratory" and other titles, which business he had promised the Post Office to discontinue, whereas he appears simply to have changed the trade style under which he carried on his activities in this field.

[On June 10, 1937, another government agency, the Federal Trade Commission, announced that it had got the Hollywood Hygienic Products, Inc., to promise to discontinue representing that its "Glandex" was a tonic and competent remedy for nervousness and sleeplessness; that its "Hollywood Dainties" had "germicidal qualities" which "become active at once"; that its "Ur-Gard" was a medical corps prophylactic effective for prevention or treatment of social diseases generally, and that its "Retardex" was a gland tonic, was harmless, and had been used with success where other remedies had failed.]

Correspondence

GALLSTONES IN CHILDREN

To the Editor:—The excellent article by Scidler and Brakeley on "Gallstones in Children" (THE JOURNAL, May 25, p. 2082) fails to mention, in consideration of etiology, the importance of hemolytic anemia. The bouts of excessive bilirubinemia and pigment excretion characteristic of certain cases of congenital hemolytic ictero-anemia and of sickle cell anemia seem to predispose to early gallstone formation. In the past few years I have seen two examples of each condition in patients under 15 years of age. The following synopsis of the history of a recent case will serve to illustrate the point:

A lad of 14 was referred because the family physician was unwilling to accept the diagnosis and hopeless prognosis, given elsewhere, of "terminal juvenile biliary cirrhosis." Examination disclosed deep jaundice, mahogany colored urine, fever, a mass in the liver area, splenomegaly, dehydration, purpura and ominous drowsiness. The boy had been "sickly" for five or six years but had "kept going" until two weeks before I saw him, when acute abdominal distress and deep jaundice supervened. Laboratory studies showed a putty colored achololic stool, marked bilirubinuria, an immediate direct van den Bergh reaction with "over 40 units" indirect, moderate anemia with 10 per cent reticulocytes, typical spherocytosis and a fragility test indicating hemolysis beginning at 0.650 and being complete at 0.425. A diagnosis was made of cholelithiasis with common duct stone complicating chronic hemolytic ictero-anemia. After preparation with vitamin K and a blood transfusion, which brought the prothrombin time from 128 seconds to twenty-four seconds, an operation was performed (Dr. I. S. Ravdin). Stones were removed from the distended gallbladder and common duct. Some weeks later, with subsidence of most of the jaundice but with increasing anemia and reticulocytosis and urobilinuria, the greatly enlarged spleen was removed. The boy made a splendid recovery, gained 18 pounds (8.2 Kg.) in two months and is perfectly well.

To complete this aspect of the problem of "gallstones in childhood," two additional points should be made: these hemolytic anemias, while predisposing to cholelithiasis, may produce bouts of abdominal pain independently of gallstones: the finding of gallstones in childhood suggests the advisability of careful hematologic study to establish or exclude the sometimes remarkably latent stigmas of hemolytic ictero-anemia.

THOMAS FITZ-HUGH JR., M.D., Philadelphia.

EDUCATION ABOUT DIABETES

To the Editor:—I have just read with interest your editorial on diabetes in Pennsylvania and am glad that you emphasize the importance of this disease as a public health problem.

Beginning about 1929, I have again and again called attention to the fact that here was one prevalent disease of later life for which medical science could do much, and that it was the responsibility of the health authorities to assume some leadership by carrying on the necessary educational work among both the general public and the medical profession. I finally induced Dr. Shirley Wynne, at that time city health commissioner, to take the matter up with the New York Academy of Medicine. A special committee, of which Dr. Mosenthal was chairman and of which I was a member, presented a report and this in turn subsequently led to the organization of the New York Diabetes Association. Dr. Ralph Scott is now president of the association and I am vice president.

That the registered death rate of diabetes has increased since the introduction of insulin is due almost entirely to the publicity given to the disease as the result of Banting's discovery. More and more diabetic patients are coming under the care of physicians, and more and more frequently is the diagnosis of diabetes being made. Routine testing of urines for sugar is also becoming more common.

Following New York City's lead, diabetes associations were established in Philadelphia, Cincinnati, Detroit, and Rochester, N. Y. In other parts of the country also there is beginning to be a realization of the importance of attacking diabetes as a public health problem. At the Atlantic City session of the American Medical Association in 1935 I had a booth giving pertinent statistical and other data and outlining a practicable control program. The latest issue of the *New York State Journal of Medicine* carries an article by Dr. Frederick Williams on the free summer camp maintained by the New York Diabetes Association for indigent New York diabetic children.

CHARLES F. BOLDUAN, M.D., New York.
Director, Bureau of Health Education.

A NOTE ON HISTAMINASE

To the Editor:—A recent communication to THE JOURNAL by Keeney on the treatment of hay fever by the oral administration of histaminase may possibly convey the impression that we have been in part responsible for the clinical use of this enzyme. The same impression could be secured from other reports and from the advertising material of the Winthrop Chemical Company.

In a review on histamine published by us in 1931 work on histaminase was summarized, and it was pointed out that the presence of the enzyme in various tissues, particularly the kidney, may constitute one of several defense mechanisms possessed by the body for the inactivation of histamine. It was not suggested, nor has this been done in any subsequent publication, that the administration of histaminase might be a useful mode of therapy.

Investigations in this laboratory in the period 1930-1932 showed that administration of histamine to animals for a period of some weeks has no effect on the histaminase content of the kidneys. It would be expected that increased need for histaminase would cause an increased production of the enzyme, especially during a prolonged period. A decrease in enzyme content is not observed after a single large dose of histamine. Protection of guinea pigs against anaphylactic and histamine shocks was attempted with completely negative results. After the publication of a paper on this subject by Brown and Karady the work was repeated and negative results were again secured.

It was reported in 1930 that histaminase was inactivated in acid solutions. This would suggest that introduction of the

enzyme into the stomach would render it inert. We have found, as would be expected, that histaminase is inactivated by pepsin in acid solution and by trypsin in slightly alkaline solution. It would be difficult to suppose that histaminase, given orally, could survive the action of proteolytic enzymes in the gastrointestinal tract. The suggestion might be made that histaminase, given orally, would inactivate histamine in the intestine, thus preventing the absorption of a toxic amine. It is most unlikely that such would occur, since the enzyme is itself rapidly destroyed by the digestive ferments.

Our investigations over a period of ten years have failed to show that the intravenous or intramuscular administration of histaminase has any effect on histamine present in the body or on that given by injection. Preparations of histaminase at least four times as potent as any commercially available have been used without success. Possibly very active enzyme preparations might have a demonstrable effect, but such preparations are not yet available.

The work on histaminase provided evidence regarding one of several mechanisms possessed by the body for the destruction of histamine. Data regarding the chemical and physical properties of the enzyme system were made available. The results of investigations which we considered to have no obvious practical application have been applied by others to clinical problems. For some years we have consistently answered numerous inquiries about histaminase with the statement that we believed there was no physiologic basis on which to rest its clinical use.

C. H. BEST, M.D.
E. W. MCHENRY, PH.D., Toronto.
Department of Physiological Hygiene,
University of Toronto.

PULMONARY EMBOLISM FOLLOWING INJECTION TREATMENT OF VARICOSE VEINS

To the Editor:—The recent article of Dean and Dulin entitled "Pulmonary Embolism Following the Injection Treatment of Varicose Veins" (THE JOURNAL, April 6, p. 1344) has evoked two critical communications (May 25, p. 2139, and June 22, p. 2489). Tending to agree in substance with Dean and Dulin's thesis and to disagree with some of the criticisms, I wish to point out several facts.

The treatment of varicose veins is divided between surgeons on the one hand and dermatologists and general practitioners on the other. It is often pointedly odd that the former, who can do either an injection or an operation, will use both methods, depending on the type of case under treatment, while the latter, with a limited repertoire, will use only the method at hand. This, of course, does not apply to dermatologists with the standing and the facilities for referring cases of Dr. Isaak but is true of some medical men in smaller communities. Whereas the surgeon may prefer one type of treatment, he at least has a free choice. Those who are not surgeons must either inject or give up the case.

Another point concerning the treatment of veins is that case mortality must not be confused with treatment mortality. In a large series observed by Sicard and Gaugier, the average patient received eight injections. Thus, if a patient survives one injection he still has to receive the other seven on the average before his final mortality rate can be computed, and by this time the mortality rate per case approaches that for ligation as given in the literature. It is quite true, however, that the statistics of Westerborn, quoted by Isaak, do refer to patients, but this objection does not hold for some other statistics in the literature.

Isaak further quotes Kilbourne as stating concerning ligation: "Ligation may cause a funnel-shaped blind pocket in the vein proximal to the ligature" which may develop a thrombosis. It is to be pointed out that one of the chief purposes of the modern high ligation operation is to avoid this very funnel.

Another factor not sufficiently stressed in the literature is the beneficial effect of ambulatory treatment. Injections have almost always been done on ambulatory patients and hence have had the advantage of this factor with its accompanying low mortality. Ligations, on the other hand, have only recently been done almost entirely on ambulatory patients. In the literature little differentiation is made between mortality following ligation on bed and on ambulatory patients. If this is such an important factor, it would be only fair to compare the results of injection and ligation on only ambulatory patients. I myself am not aware of any death of an ambulatory ligation patient. So convinced am I of the importance of this feature of the treatment that I emphasize night walks as well as day exercise in the postoperative care. Patients are instructed never to stay in a bed longer than seven consecutive hours during the first two weeks after ligation. If they prefer to go to bed early and arise late, they must get up once or more during the night for a brief turn about the room. Patients are never operated on for varicose veins at the same time that other surgical procedures are performed or at a time when for any other reason they are likely to be kept in bed.

These points seem to me to answer several of the objections raised by Isaak in his criticism of Dean and Dulin's article. Finally, with regard to Taylor's communication stating that in one of two cases of pulmonary embolism reported by Dean and Dulin (following injection), since death occurred only after a second embolism, prophylatic ligation of the femoral vein should have been done after the first attack of embolism, I can only say that I disagree. It would seem far safer and less radical, and possibly even surer, to start heparin administration as advised by McClure and Lam in the same issue of THE JOURNAL as that in which Isaak's communication appeared.

HENRY N. HARKINS, M.D., PH.D.,
Henry Ford Hospital, Detroit.

SYPHILIS CASE FINDING IN INDUSTRY

To the Editor:—In my article entitled "Syphilis Case Finding in Industry," published in THE JOURNAL April 6, an error was made in stating the annual attack rate of syphilis per hundred thousand of population in Great Britain. The statement in error appears in the fourth paragraph (p. 1321) and reads as follows: "The annual attack rate of syphilis per hundred thousand of population in the United States in 1935 was 796 compared with 47 in Great Britain (clinics only) . . ."

The correct annual attack rate of syphilis for Great Britain (England, Scotland and Wales) in 1935 was 15.3 per hundred thousand of population. It is, therefore, respectfully requested that a public correction notice be inserted in an early issue of THE JOURNAL. This notice should state that, through inadvertence, I incorrectly quoted an annual syphilis attack rate of 47 per hundred thousand of population for Great Britain in 1935 instead of a rate of 15.3 per hundred thousand. The rate of 47 per hundred thousand quoted in my article refers to the "number of cases dealt with for the first time at treatment centers" for syphilis. Since this figure includes patients with syphilis in all stages and patients who may have previously obtained treatment for syphilis through private physicians, the figure does not represent a true incidence rate.

ALBERT E. RUSSELL, M.D., Chicago.
Surgeon in Charge, Syphilis Control in Industry,
U. S. Public Health Service.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

TREATMENT OF CHRONIC MALARIA

To the Editor:—A woman whose past history is essentially irrelevant had a repair of the cervix and pelvic laparotomy in 1933, when 42 years old. Her recovery was uneventful. Several months later she had an attack of fever and malaise which was diagnosed as malaria, and since she was allergic to quinine she was given fifteen 1½ grain (0.1 Gm.) atabrine tablets. Her response was favorable and described by her as remarkable. Six weeks later she had a recurrence of fever and the same treatment was repeated. Since 1933 she has taken a course of atabrine every four to six weeks with several courses of plasmochin following. She states that only during the time she is taking atabrine and for a few weeks afterward does she feel well. If there is a lapse of more than six weeks between courses she complains of nervousness, lassitude, low grade fever and weakness with a number of occasions when she is unable to get out of bed alone. As soon as she begins taking atabrine again she feels better and able to do about as she desires. She has taken from seventy to eighty courses of atabrine since 1933. To date I have been unable to find any harm caused by the treatment, which has been taken in spite of advice to the contrary given her by various physicians. She is intelligent and apparently not of a neurotic type. She states that only as a last resort has she at any time taken atabrine. Examinations by several competent internists have revealed only a mild secondary anemia. Her examinations include numerous blood smears and blood chemistry examinations, Widal tests and other agglutination tests and gastrointestinal x-ray studies, all of which are negative. At present except for a mild secondary anemia and a transient hypertension with the blood pressure varying from 120 systolic, 60 diastolic to 150/80, nothing significant has been found. The basal metabolic rate is —9 per cent. The following questions arise: Is this simply a neurosis? Can atabrine favorably influence any condition except malaria? Is it possible that this drug may act as a si ulant and by its slow elimination make the woman have a sense of well ing until the drug is eliminated? Can the drug be habit forming? Surely, malaria can be eliminated.

M.D., Florida.

ANSWER.—An analysis of this case history suggests that a residuum of the infection is being maintained in spite of repeated courses of atabrine. Following the termination of a therapeutic course of atabrine (three 1½ grain tablets a day for five days) a period of approximately a month is required before this drug is completely eliminated from the system. During this period probably all the parasites in the circulating blood are destroyed by the drug and the infection is kept at a subclinical level. It is even possible that the residual exo-erythrocytic plasmodia may be temporarily stupefied by the action of the drug. However, as soon as atabrine is completely eliminated the plasmodia again get into the circulating erythrocytes and multiply, with resulting clinical manifestations.

The statement that "surely, malaria can be eliminated" is probably true for most patients who are given adequate drugs at the beginning of the patent infection, and some patients probably become free from the plasmodia even without the benefit of antimalarial treatment. However, the consensus among malariologists today suggests that none of the known therapeutic agents alone or in combination can be guaranteed to eliminate the malaria plasmodia from the body unless the macrophage system actively cooperates in the attack. Thus, if the patient's resistance is low at the time of the initial attack or becomes lowered by repeated attacks, antimalarials alone can be expected to do no more than reduce the infection temporarily below clinical grade.

European malariologists are more and more recognizing the Ascoli technic as an important adjuvant in the treatment of chronic malaria. This consists of daily injections of epinephrine by the intravenous route. The first injection consists of 1 cc. of a 1 : 100,000 solution, the second 1 cc. of a 1 : 90,000 solution, the third 1 cc. of a 1 : 80,000 solution and so on daily until a strength of 1 : 10,000 has been reached. This last dose is repeated daily for approximately three weeks. In case intolerance develops to the stronger solutions, return may be made to a weaker solution and a second build-up attempted. The rationale of this technic is to throw the parasites out of the spleen into the circulation, so that they may then be attacked and killed by antimalarial drugs.

Treatment of chronic malaria is not the simple task it was believed to be even a decade ago. Hand in hand with antimalarial treatment there should be a program to build up the patient's resistance with rest and light exercise, vitamin therapy and relief from worry.

There is no evidence in the case cited that the patient is suffering primarily from a neurosis. Apparently she tolerates atabrine extremely well. The only specific action of this drug is believed to be against the malaria plasmodia. While there are inadequate data concerning the possible side effects of this drug when administered over a long period of time, there is no evidence that it is habit forming, although obviously a patient who experiences temporary relief from symptoms following its use will come to rely on it at each subsequent attack.

EXHIBITIONISM

To the Editor:—Will you give me some information as to the cause and treatment of exhibitionism. I have a man with this condition and I should like to help him.

M.D., Illinois.

ANSWER.—The problem of exhibitionism is usually related to disorders of the total personality. It is seen in otherwise normal people, in persons with senile psychoses and sometimes in the postepileptic confusional states. Such anomalies of the sexual instinct often give rise to medicolegal problems. It is commonly accepted that there is considerable variation in the intensity of sexual desire in different persons. However, the important factor is not the intensity but the degree of control that can be exerted over such instinctive drive. This control is exercised by mental activity and therefore it is not uncommon to find exhibitionism in subjects who are mentally defective or feebleminded or suffering from dementia. Furthermore, self control may also be removed in other forms of mental disorder such as states of manic excitement or alcoholic intoxication. Sexual perversions are found in otherwise normal people. The true "pervert" usually finds no pleasure in normal sexual relations and may even be impotent under such conditions. Some of them, however, lead a dual life, may marry and raise a family, at the same time seeking "perverted" satisfaction elsewhere.

In exhibitionism, sexual gratification is sought by the more or less frank exposure of the genitals to members of the opposite sex. This behavior may be impulsive or episodic and is most often carried on by men, usually possessed of superior or average intelligence.

This patient should be given a careful personality study with emphasis on his sexual drive, with an attempt to find the causes for the fixation of his sexual development at this level of satisfaction. Such a person requires prolonged treatment by a psychiatrist with, first, meticulous analysis of the causes and then resynthesis of the personality, so that he may obtain satisfaction on a normal, socially acceptable, adult, heterosexual level.

ENDOMETRIOSIS AND PREGNANCY

To the Editor:—My wife is 28 years of age and has never been pregnant. After considerable pelvic pain of about six weeks' duration her left ovary was removed in November 1939. At operation we found a large chocolate cyst densely adherent to the abdominal wall. The pathologic report is endometriosis with extension into the fallopian tube and abdominal wall. She made a speedy recovery. Her periods have been regular but have been accompanied by increasing pain both in the left flank and in the rectum. Pelvic examination reveals a nodule of increasing size. We wish to have a child before things go wrong. What effect does pregnancy have on endometriosis, especially as to symptoms? What is today the best accepted treatment? Panhysterectomy? Oophorectomy? X-rays? Radium? What about some of the new hormones, such as testosterone proprionate, to inactivate the ovary?

M.D., Pennsylvania.

ANSWER.—There is a high incidence of primary and secondary sterility in women who have endometriosis. Among the 131 married patients with endometriosis seen at the Mayo Clinic, 48.9 per cent either had never been pregnant or had had only miscarriages. The absolute sterility rate was 32.1 per cent (Counseller, V. S.: *Am. J. Obst. & Gynec.* **37**:788 [May] 1939). In a series of 238 married women with endometriosis studied by Payne (*ibid.* **39**:373 [March] 1940) 40 per cent had never been pregnant. Because of this high incidence of sterility it is generally unwise to preserve the reproductive function in cases in which the disease is diffuse. On the other hand, when the disease is unilateral or when there are only scattered implants on the peritoneum one should always try conservative treatment for women who are desirous of having children and for those under 40 years of age.

At the Mayo Clinic fifty-five women who were capable of having children were treated conservatively but only seven (12 per cent) of them conceived and had ten children. In Payne's series the incidence of pregnancy for conservative treatment was 21 per cent.

Special forms of conservative treatment may be tried. Cooke (*Am. J. Obst. & Gynec.* **37**:796 [May] 1939) performed presacral and ovarian neurectomy in four cases of endometriosis and the lesions underwent regression. One of the patients had

two children after the operation. In another case the mass was reduced to a fifth of its original size. Whether the neurectomy had anything to do with the regression is problematic. Pratt (*Am. J. Obst. & Gynec.* **37**:796 [May] 1939) believes it is possible to relieve some of the pain due to endometriosis by cutting down the ovarian function. This is done by removing one entire ovary and a half or a third of the other. One patient had three pregnancies following such an operation. The majority of the patients were relieved of pain. Another form of conservative treatment which is at the same time simple is destruction of the areas of endometriosis with the electric cautery.

When pregnancy does occur in a woman with endometriosis it does not produce any special disturbances.

The present patient should make an effort to have a baby as soon as possible. If conception fails to take place and the nodule grows and especially if the pain increases, an operation will have to be done. This is preferable to the use of radium or x-rays because it may be possible to remove the nodule and only the diseased part of the remaining ovary. Likewise it will enable the operator to perform a presacral sympathectomy and ovarian neurectomy to relieve the patient's pain. If radiation therapy is used the entire function of the ovary will most likely be eliminated, resulting in a premature menopause. Of course even if an operation is performed in the present case there is likelihood that in order to produce a lasting cure the entire remaining ovary will have to be removed. However, laparotomy will reveal whether or not this is necessary. If, however, the nodule is in the rectovaginal septum, as it may be in this case, it is wiser to employ radiation therapy because surgical intervention would entail removal of the rectovaginal septum with the risk of a fecal fistula.

In the large majority of cases of endometriosis, operation should be employed because the women are in the reproductive period of their lives. In Payne's series 289 were operated on and only fifteen were irradiated. Complete ovarian ablation was necessary in 48 per cent of the surgical subjects.

Endocrine therapy has thus far been useless in the cure of endometriosis. Testosterone propionate may inhibit ovarian activity but the effect will be only temporary.

HEMATOPORPHYRIN IN MELANCHOLIA

To the Editor:—**Recently I have read some articles concerning the use of hematoporphyrin in melancholia of the involutional type. These simply state that a small dose was used both hypodermically and orally. I would appreciate more specific information regarding its use in this state, its dosage and its toxic reactions, if any.**

Lowell C. Smith, M.D., Lafayette, Ind.

ANSWER.—There have been several favorable reports on the use of hematoporphyrin for the treatment of melancholia of the involutional type.

Hühnerfeld in 1931 found that injections of hematoporphyrin in animals increased their total motor activity and as a result he used this agent in the treatment of psychotic depressions in thirteen cases.

E. A. Strecker reported its use in the affective psychoses and found that, when hematoporphyrin was administered either orally or intramuscularly or by both technics to psychotic patients, it seemed to produce activation, in some patients mental stimulation and in others somatic improvement. In fifty-five subjects with affective reactions 36.4 per cent showed sustained improvement, 18.2 per cent moderate clinical improvement, and 18.2 per cent general physical improvement but no change in the course of the psychosis, while 27.2 per cent were not benefited. Moreover, there were no significant changes found in the blood chemistry or general body metabolism of twelve patients carefully studied.

The oral solution commonly used contains 5 mg. of hematoporphyrin hydrochloride per cubic centimeter and in the hypodermic solution there is 2 mg. per cubic centimeter.

Oral administration recommended by Angus consists of ten drops in water three times a day before meals, increasing by one drop each day until a maximum of thirty drops three times a day is given; then decreasing the dose at the same rate until ten drops three times a day is reached, when treatment is discontinued.

Hypodermic administration consists of 0.5 cc. the first day, followed by 1 cc. each for the next eight doses given on alternate days. After a rest of one week the series is repeated, this time starting with 1 cc. followed by nine doses of 2 cc. at two day intervals.

Thorner has reported a case of multiple neuritis following the use of this drug. Slight continuous discoloration is also often related to the hypodermic injection of the drug.

The exact action of hematoporphyrin in melancholia is unknown. Much additional research and more carefully controlled groups of control cases must be studied before any final judgment can be given concerning the effectiveness of this medicament.

References:

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2. Notkin, John; Huddart, Viola, and Dannes, Blanche: Hematoporphyrin Treatment in Dementia Praecox and Involutional Melancholia, *Psychiat. Quart.* **9**: 368 (July) 1935.
3. Angus, L. R.: The Hematoporphyrin Treatment of Depressive Psychoses, *Am. J. Psychiat.* **92**: 877 (Jan.) 1936.
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5. Schaeffer, Henri: Hematoporphyrin Therapy of Depressive Conditions: Results and Mode of Action; A. Review, *Presse méd.* **47**: 1207 (Aug. 5) 1939.
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PREVENTION OF SMOTHERING IN INFANTS

To the Editor:—**Recently newspapers of this city have recorded several accounts of infants who have apparently smothered to death in their coverings. What would be the most advisable way to cover an infant in order to prevent such a catastrophe? Is there any way of safely fastening the covers to the bed in order to prevent the infant's kicking the covers off during the night and yet not risk strangulation or suffocation? Sleeping bags for infants with a collar-like arrangement around the neck are available. Have any fatalities been reported resulting from the use of these? Have they been shown to be less hazardous to the infant than ordinary covers as far as the danger of strangulation is concerned? There seems to be a trend among younger pediatricians to have newborn and young infants sleep on their abdomens. This supposedly lessens the risk of aspirating mucus or regurgitated material. Has the superiority of the prone over the supine position for young infants been definitely demonstrated? Would the danger of suffocation be greater or less in the prone position? I have noted that infants who sleep in the prone position have a tendency to develop a "froglike" attitude of the extremities and an up-tilted nose. Is there any danger of permanent deformity from the prone position?**

M.D., Pennsylvania.

ANSWER.—Undoubtedly many of the newspaper accounts of infants having smothered to death in their coverings are not authentic because when complete necropsies are done on infants who die suddenly in bed it is not uncommon to find other causes of death than suffocation.

However, the following precautions may be taken to prevent such catastrophes: Most important is a firm and hard mattress without sagging, so that the infant cannot slip down in the middle. Infants under 1 month or 6 weeks of age, who cannot raise their heads and shoulders from the bed easily, may be placed on the abdomen or back during the day when some one is in the room watching them; at night it is better to keep them on the side. Especially does this apply to infants during the first weeks, when vomiting is more frequent. The side position may be accomplished by tucking the covers snugly under one side of the infant, the other edge of the covers being tucked firmly under the mattress. Older infants may safely be allowed to sleep on the abdomen. Pillows should not be used.

It is doubtful whether sleeping on the stomach could cause any of the deformities mentioned, but in order to alleviate any possibilities of flattening the head or nose an infant can be placed on its back for twelve hours and on its abdomen for the other twelve hours.

There is less danger of a baby mechanically aspirating regurgitated material when sleeping on its stomach, provided the baby can lift its head and shoulders out of the vomitus.

The safest method of fastening the covers to the bed is to have covers wide enough so that they can be thoroughly and snugly tucked in on the sides under the mattress. The covers should not come any higher or little higher than the nipple line. This and a hard mattress make it practically impossible for the infant to get out of position.

Most of the so-called sleeping bags on the market for infants are safe, provided a hood arrangement does not go over the head and provided the collar fits snugly enough around the neck so that the infant cannot pull its head through the opening down into the bag. These are not advisable, however, for young infants as the neck fit is not small enough as a rule to prevent this. As far as known fatalities have not been reported from the use of the present improved sleeping bags. They are probably no more or less hazardous than wide covers properly tucked in.

Elastic attached to the upper bed posts connected with clips attached to the upper corners of the cover is satisfactory, as the covers are then held fast slightly above the upper level of the infant and cannot become twisted about him.

CHILL WITHOUT FEVER

To the Editor:—**A young man was awakened from sleep at 5 a. m. by a severe shaking chill. He still was shaking with a typical chill about twenty minutes later. He had no other complaints and physical examination was negative except for slight redness of the pharynx. The rectal temperature, taken during the chill and one-half hour after the chill, was absolutely normal. About ten minutes after I left the house he suddenly vomited some half-digested "hot dogs" that he had eaten about five hours previously. Later that same morning the patient felt perfectly fine and the temperature was still normal. How can one explain a typical chill without any rise in temperature? Could gastric irritation without nausea or pain preceding the sudden vomitus produce a chill without any succeeding fever?**

David E. Zuckerman, M.D., Paterson, N. J.

ANSWER.—One can only speculate as to the nature or the cause of the "typical" chill described. It may be asked What is meant by a typical chill? Presumably the patient felt cold and shivered or had persistent clonic contractions. It would be important to know what the patient's occupation was or what he did on the preceding day and evening. Inhalation of metal fumes, for example, may at times cause delayed reaction with chills, but constitutional symptoms usually develop also. It would be important to know if he had ever had any other convulsive seizures which might have been epileptiform in character. Did the patient sleep in a cold room or become chilled by tossing off his covers? It is common knowledge that chills may follow overexposure to cold, as in swimmers, but they seldom last for twenty minutes. Fleeting chills may follow micturition, supposedly either from the sudden loss of a large volume of warm fluid or from "nervous" causes. It is conceivable that a chill may not be followed by a rise in temperature if the mechanism for the dissipation of heat is intact, but one would then have to assume that perhaps the temperature previously was reduced to subnormal levels and raised to normal by the chill. It is difficult to understand how gastric irritation alone could produce a chill unless it again could be explained on a "nervous" basis. The possibility of indigestion accompanied by a nightmare with an emotional aftermath may also be considered.

SENSITIZING TO MILK BY PARENTERAL INJECTION

To the Editor:—**Milk is commonly employed parenterally by intramuscular injections in nonspecific protein shock therapy of chronic pelvic inflammatory disease and other conditions. Is there any danger of sensitizing a patient by injection of milk, thus rendering subsequent injections, say a month or two later, dangerous from an anaphylactic point of view?**

Willis P. Baker, M.D., Santa Ana, Calif.

ANSWER.—Sensitization by parenteral injections is in most cases difficult. The type of allergen used is one of the factors which determine the ease and degree of sensitivity that can be induced. For instance, the danger from injections of horse serum is generally known. It has been found difficult, however, to sensitize human beings experimentally with such substances as orris root, egg white and rabbit dander. Nor is there any difference in the susceptibility for atopic and nonatopic individuals becoming artificially sensitive (Simon and Rackemann; Cooke and Vander Veer). Simon and Rackemann found that the degree of sensitivity induced artificially by the injection of rabbit serum was much milder and less permanent than "natural" allergy. However, one should point out the unusual cases of allergy developing in cases in which injections of such substances as liver, and even insulin, have been given. In the former group, especially, severe anaphylactic reactions have been reported.

From this work it appears that an artificially induced sensitivity to milk should be uncommon and not likely to be dangerous. One must, however, point out the danger of giving such injections to patients who are allergic to milk. In these cases injections of milk may be dangerous.

FLUORESCENT LIGHTING WITH ARGON

To the Editor:—**I am interested in illumination and desirous of information relative to the new electric gas light put out by Efcolite Corporation, Trenton, N. J.**

Andrew L. MacMillan Jr., M.D., Concord, N. H.

ANSWER.—The Efcolite Corporation, along with several others, manufactures a variety of lighting fixtures for the new fluorescent type of bulb in which argon or a similar gas is the electrical conductor. These lamps provide a diffuse, glareless illumination with the production of almost no heat. This type of lamp is frequently referred to as furnishing "cold light." The chief objection that has arisen to these lamps is the stroboscopic effect produced. Although shadows are not prominent, such shadows as may be seen appear to be in motion. This is due to the to and fro surge of the electrical current. This has been overcome by multiple units set at different phases, so that the stroboscopic effect of one bulb is overcome by the others. The effectiveness of fluorescent bulbs is much influenced by the type of fixture. In the past some fixtures have not been of praiseworthy design. The fixtures now manufactured and sponsored by a new light manufacturers' association are believed to be free from the undesirable features that may have existed previously.

At the present time fluorescent lighting is chiefly observed in banks, department stores, laboratories, tap rooms, physicians' examination rooms and editorial rooms rather than in industry, auditoriums or homes. However, the field of possible use is large and extension is probable.

THERAPEUTIC USE OF MANURE

To the Editor:—**Will you please oblige with the following information: 1. Is or was manure ever used therapeutically in the human body? 2. Is there danger from tetanus and the like? 3. Will the effect of manure be influenced by the addition of (a) phenol, (b) oil, (c) alcohol, (d) mustard, (e) cantharides, (f) capsicum, (g) aconite, (h) petrolatum? 4. Is there a difference between steer manure and cow manure chemically, such as in the content of sex hormones? 5. Can an extract be made of manure?**

M.D., California.

ANSWER.—1. Medical writings from the earliest times are replete with references to the use of animal and human excrement as therapeutic agents, both within and on the human body.

2. The danger of tetanus as well as other infective organisms is always present, especially when the manure is used as a poultice. When an extract is made by boiling for some time, the danger is materially lessened.

3. The effect of manure would be influenced by the addition of phenol, oil, alcohol, mustard, cantharides, capsicum, aconite or petrolatum. Naturally, the amount of the agents added would determine the degree of modification of the action. If relatively large amounts were used, the action would be more that of the added medicament.

4. There is no difference chemically (including the content of sex hormone) between the manure of the steer, of the bull and of the cow. Sex hormone is not excreted in the feces. If the urine became mixed with the feces there would be a difference in the content of sex hormone between that of a pregnant cow and that of a bull or steer, but only because of the admixed urine. In some species, small amounts of estrogens are found in the feces.

5. An extract of manure can be made by the usual methods. If alcohol is used as the menstruum, the extract will contain all the alcohol soluble substances. If water is used as the menstruum, the extract will contain the water soluble principles.

CESSATION OF MENSES AFTER ERGOTAMINE TARTRATE

To the Editor:—**A married woman aged 32 has attacks of hemicranial headaches accompanied by nervousness and vomiting occurring from fifteen to twenty times a year. Many attacks correspond to the first day of the menses, others do not. During the last year the attacks have been treated with 0.5 cc. of ergotamine tartrate and the patient received prompt dramatic relief when the ergotamine tartrate was given at the onset of the menses. The patient stops flowing within six hours and does not flow again until her normal menstrual period. Is this reaction to ergotamine tartrate harmful to the patient and would you suggest continuation of this method of treatment?**

M.D., Washington.

ANSWER.—Presuming that the menstrual history of the patient with headache is within normal limits and presuming that no other changes have occurred from the administration of ergotamine than those stated, it is probably safe to continue treatment as often as twenty times a year without fear of complications.

As is well known, ergotamine is an oxytocic and might be expected to terminate a menstrual period. It is also a vasoconstrictor and would thus decrease hemorrhage. It might be advantageous to try from 10 to 20 mg. of benzedrine sulfate with the ergotamine when given on the first day of the menses. It would be inadvisable to give the ergot to this patient during pregnancy.

SEROUS ATROPHY OF FAT ON EPICARDIUM

To the Editor:—**From time to time I have seen marked edema on the surface of the heart at autopsy in advanced cases of pulmonary tuberculosis. Is there any explanation for this edema?**

Raymond H. Goodale, M.D., Worcester, Mass.

ANSWER.—The reference is probably to "serous atrophy of fat," which is often observed in the epicardium after severe emaciation. It is essentially an infiltration of the tissue spaces of adipose tissue after bulk has been lost through atrophy of the fat. It is not specific for tuberculosis.

Medical Examinations and Licensure

COMING EXAMINATIONS

NATIONAL BOARD OF MEDICAL EXAMINERS
EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and Examining Boards in Specialties were published in THE JOURNAL, July 13, page 153.

BOARDS OF MEDICAL EXAMINERS

ALASKA: Juneau, Sept. 3. Sec., Dr. W. W. Council, Box 561, Juneau.

ARKANSAS: *Regular.* Little Rock, Nov. 7-8. Sec., Dr. D. L. Owens, Harrison. *Eclectic.* Little Rock, Nov. 7. Sec., Dr. Clarence H. Young, 1415 Main St., Little Rock.

CALIFORNIA: *Oral examination* (required when reciprocity application is based on a state certificate or license issued ten or more years before filing application in California), San Francisco, Oct. 2. *Written examination.* Sacramento, Oct. 21-24. Sec., Dr. Charles B. Pinkham, 1020 N St., Sacramento.

CONNECTICUT: *Endorsement.* Hartford, July 23. Sec., Dr. Thomas P. Murdock, 147 W. Main St., Meriden.

DISTRICT OF COLUMBIA, Washington, Nov. 11-12. Sec., Commission on Licensure, Dr. George C. Ruhland, 203 District Bldg., Washington.

FLORIDA: Tampa, Nov. 18-19. Sec., Dr. W. M. Rowlett, Box 786, Tampa.

GEORGIA: Atlanta, Oct. 8-9. Joint-Sec., State Examining Boards, Mr. R. C. Coleman, 111 State Capitol, Atlanta.

IDAHO: Boise, Oct. 1. Dir., Bureau of Occupational License, Mr. H. B. Whittlesey, 355 State Capitol Bldg., Boise.

ILLINOIS: Chicago, Oct. 1-3. Superintendent of Registration, Mr. Lucien A. File, Springfield.

KANSAS: Topeka, Dec. 10-11. Sec., Dr. J. F. Hassig, 905 N. Seventh St., Kansas City.

KENTUCKY: Louisville, Dec. 3-5. Sec., State Board of Health, Dr. A. T. McCormack, 620 Third St., Louisville.

MARYLAND: *Homeopathic.* Baltimore, Dec. 10-11. Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore.

MICHIGAN: Lansing, Oct. 9-11. Sec., Dr. J. Earl McIntyre, 202-4 Hollister Bldg., Lansing.

MINNESOTA: Minneapolis, Oct. 15-17. Sec., Dr. Julian F. Du Bois, 350 St. Peter St., St. Paul.

MISSISSIPPI: *Reciprocity.* Jackson, December. Asst. Sec., State Board of Health, Dr. R. N. Whitfield, Jackson.

MONTANA: *Reciprocity.* Helena, Sept. 30. *Written.* Helena, Oct. 1-2. Sec., Dr. S. A. Cooney, 216 Power Block, Helena.

NEVADA: *Reciprocity with oral examination.* Aug. 5. Sec., Dr. Fred M. Anderson, 215 N. Carson St., Carson City.

NEW MEXICO: Santa Fe, Oct. 7-8. Sec., Dr. Le Grand Ward, 135 Sena Plaza, Santa Fe.

NEW YORK: Albany, Buffalo, New York and Syracuse, Sept. 23-26. Chief, Bureau of Professional Examinations, Mr. Herbert J. Hamilton, 315 Education Building, Albany.

OKLAHOMA: Oklahoma City, Dec. 11. Sec., Dr. James D. Osborn Jr., Frederick.

PUERTO RICO: San Juan, Sept. 3. Sec., Dr. O. Costa Mandry, Box 3854, Santurce.

TEXAS: *Endorsement.* Dallas, July 28. Sec., Dr. T. J. Crowe, 918-20 Mercantile Bldg., Dallas.

VERMONT: Burlington, Feb. 11. Sec., Dr. W. Scott Nay, Underhill.

VIRGINIA: Richmond, Dec. 4-6. Sec., Dr. J. W. Preston, 30½ Franklin Rd., Roanoke.

WISCONSIN: Madison, Jan. 14-17. Sec., Dr. H. W. Shutter, 425 E. Wisconsin Ave., Milwaukee.

WYOMING: Cheyenne, October. Sec., Dr. M. C. Keith, Capitol Building, Cheyenne.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

DISTRICT OF COLUMBIA: Washington, Oct. 21-22. Sec., Commission on Licensure, Dr. George C. Ruhland, 203 District Bldg., Washington.

FLORIDA: Gainesville, Nov. 1. Applications must be on file not later than Sept. 16. Sec., Dr. John F. Conn, John B. Stetson University, De Land.

MINNESOTA: Minneapolis, Oct. 1-2. Sec., Dr. J. Charnley McKinley, 126 Millard Hall, University of Minnesota, Minneapolis.

NEBRASKA: Lincoln, Oct. 1-2. Dir., Bureau of Examining Boards, Mrs. Clark Perkins, 1009 State Capitol Bldg., Lincoln.

SOUTH DAKOTA: *Examination.* Yankton, Dec. 6-7. *Endorsement.* Dec. 21. Sec., Dr. Gregg M. Evans, Yankton.

WISCONSIN: Madison, Sept. 21. Sec., Prof. Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee.

Rhode Island April Examination

Dr. Robert M. Lord, secretary, Rhode Island State Board of Examiners in Medicine, reports the written examination held at Providence, April 4-5, 1940. The examination covered twelve subjects and included seventy-five questions. An average of 80 per cent was required to pass. Two candidates were examined, both of whom passed. One physician was licensed by endorsement. The following schools were represented:

School	PASSED Year Grad.	Per Cent
Tufts College Medical School	(1938)	83.6
Université de Genève Faculté de Médecine	(1937)	82.8

School	LICENSED BY ENDORSEMENT Year Grad.	Endorsement of
Tufts College Medical School	(1938)	N. B. M. Ex.

Alabama Reciprocity Report

Dr. J. N. Baker, secretary, Alabama State Board of Medical Examiners, reports nineteen physicians licensed by reciprocity from January 18 through March 15. The following schools were represented:

School	LICENSED BY RECIPROCITY Year Grad.	Reciprocity with
University of Arkansas School of Medicine	(1938)	Arkansas
Emory University School of Medicine	(1921)	Georgia, (1938) California
Loyola University School of Medicine	(1938)	Illinois
University of Louisville School of Medicine	(1926)	Kentucky
Louisiana State University School of Medicine	(1935)	Louisiana
Tulane University of Louisiana School of Medicine	(1937)	Mississippi, (1938) Louisiana
University of Minnesota Medical School	(1927)	Minnesota
Long Island College of Medicine	(1932)	New York
University of Buffalo School of Medicine	(1938)	New York
Western Reserve University School of Medicine	(1937)	Ohio
Temple University School of Medicine	(1910)	Penna.
Medical College of the State of South Carolina	(1933)	S. Carolina
University of Tennessee College of Medicine	(1938, 3)	Tennessee
Baylor University College of Medicine	(1930)	Texas
Medical College of Virginia	(1919)	Virginia

California February Examination

Dr. Charles B. Pinkham, secretary, California State Board of Medical Examiners, reports the written examination held at Los Angeles, Feb. 27-29. The examination covered nine subjects and included ninety questions. An average of 75 per cent was required to pass. Seventy-six candidates were examined, sixty-five of whom passed and eleven failed. The following schools were represented:

School	PASSED Year Grad.	Per Cent
College of Medical Evangelists	(1939)	75.7* 76.4, 77.3, 77.6, 78.1, 78.9, 82.9, 84.6
Stanford University School of Medicine	(1939)	76.4, 80.6
University of Colorado School of Medicine	(1939)	85.3
George Washington University School of Medicine	(1937)	84.8
Northwestern University Medical School	(1938)	80.2† (1939) 82.9,† 83.† 83.3
Rush Medical College	(1938)	77.1, (1939) 81.3, 83.2, 83.6, 85.1
University of Illinois College of Medicine	(1927)	82, (1937) 85.6, (1939) 81.4, 83.2, 85.7,† 85.9†
The School of Medicine of the Division of Biological Sciences	(1939)	81.7
State University of Iowa College of Medicine	(1939)	85.3
Tulane University of Louisiana School of Medicine	(1939)	76.1
Johns Hopkins University School of Medicine	(1935)	83.4, (1938) 80.9
Boston University School of Medicine	(1939)	80.2
Harvard Medical School	(1937) 85.9, (1939)	80.6
Wayne University College of Medicine	(1939)	83.3†
University of Minnesota Medical School	(1939)	87.1
St. Louis University School of Medicine	(1938)	80.9
Washington University School of Medicine	(1939)	76.7
Creighton University School of Medicine	(1939)	82.6
University of Nebraska College of Medicine	(1939) 75.9, 78.9,	79
Eclectic Medical College, Cincinnati	(1935)	82.1
University of Oklahoma School of Medicine	(1939)	80.6
University of Oregon Medical School	(1939) 76.8, 80.1, 81.9,	86.1
Woman's Medical College of Pennsylvania	(1939) 78.4,	81.8
Baylor University College of Medicine	(1939)	84
Medical College of Virginia	(1936)	76.9
University of Virginia Department of Medicine	(1936)	77.8
Marquette University School of Medicine	(1938)	77.9
University of Wisconsin Medical School	(1939)	79.7
University of Toronto Faculty of Medicine	(1938) 81.9,	85.7
Medizinische Fakultät der Universität Wien	(1910)	80.3, (1926) 75.2
Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin	(1917) 82.8, (1921)	86.3
Rheinische Friedrich-Wilhelms Universität Medizinische Fakultät, Bonn	(1921)	77.3
Schlesische-Friedrich-Wilhelms-Universität Medizinische Fakultät, Breslau	(1925)	85.8
Universität Basel Medizinische Fakultät	(1936)	87.6

School	FAILED Year Grad.	Number Failed
University of Arkansas School of Medicine	(1938)	1
College of Medical Evangelists	(1939)	1
Rush Medical College	(1938)	1
The School of Medicine of the Division of Biological Sciences	(1936)	1
Louisiana State University School of Medicine	(1939)	1
St. Louis University School of Medicine	(1939)	1
University of Oregon Medical School	(1938)	1
Hahnemann Med. College and Hospital of Philadelphia	(1939)	1
Medizinische Fakultät der Universität Wien	(1937)	1
Ludwig-Maximilians-Universität Medizinische Fakultät, München	(1931)	1
Latvijas Universitäte Medicinas Fakultäte	(1928)	1

* This applicant has completed four years' medical work and will receive the M.D. degree on completion of internship.

† This applicant received the M.B. degree and will receive the M.D. degree on completion of internship.

Book Notices

Diseases of the Gallbladder and Bile Ducts. By Waltman Walters, B.S., M.D., M.S., Head of Section in Division of Surgery, The Mayo Clinic, Rochester, Minnesota, and Albert M. Snell, B.S., M.D., M.S., Head of Section in Division of Medicine, The Mayo Clinic. Cloth. Price, $10. Pp. 645, with 342 illustrations. Philadelphia & London: W. B. Saunders Company, 1940.

Though the names of Walters and Snell on the title page lead the reader to expect a book under their joint authorship and therefore with a large personal element, a scrutiny shows that there are no less than eight additional collaborators in the production of this work. Fortunately, all are members of the staff of the Mayo Clinic, so that the book is a reflection of the activities of that organization in this particular field. It took the reviewer some time to discover that the book was divided into five separate parts, each of which contains from five to nine chapters. This arrangement proves troublesome for, half way through the book, the reader may find himself perusing, say, chapter III, but without any clear indication of the part to which it belongs. Actually there are five chapter IIIs, at pages 41, 118, 229, 397 and 540, and it is necessary to turn back to the table of contents to discover their appropriate sections. The way the reader is constantly referred from one part of the text to another also is very troublesome. These two blemishes detract from the pleasure one expects from the perusal of such a book, and let us hope that in some future edition they may be corrected. Nonetheless, the work is a storehouse of valuable information representing an enormous amount of labor in its preparation, but it is neither a continuous narrative nor a consecutive surgical story. It ranks more with a first class book of reference than the authoritative work which its size and setup would suggest, to say nothing of the distinction in surgery of its senior author. The book has no less than 645 pages, including the indexes, with 342 illustrations, some of them very good, such as the beautiful colored frontispiece. There are also a great many excellent diagrammatic figures. It is printed on heavy leaded paper, which doubtless enables the illustrations to be brought out clearly but results in the production of a volume weighing three and a half pounds, so that it is not comfortable to handle or read other than at a desk. The foreword by the late W. J. Mayo has rather a sad significance, for it must have been among the last of those numerous communications which we welcomed from his pen. In it he stresses the interest of the historical approach and pays a tribute to pioneers both in Great Britain and in the United States and concludes by propounding some general problems which he thought might perhaps be answered by the study of the pathology of the biliary tract. The sections of the main work on anatomy and physiology contain much useful information, but with all the pictures that are available one misses some of the more ordinary diagrams which are so helpful, especially when anomalies of the ducts are under discussion. Some old favorites like Hartmann and his pouch are not mentioned. From the physiologic point of view the authors do not allow the gallbladder a place of great importance and there is no suggestion, for instance, that its wall may perhaps secrete a hormone of value. It is interesting to be reminded of the rhythmic contractions of that viscus, which might indeed by analogy be expected. The discussion on cholecystitis sets out some interesting points of view. One gathers that the authors are generally in favor of the infective origin of gallstones, but much experimental work and clinical experience will have to be thrown entirely aside if we are to give up the possibility of the influence of some metabolic and chemical factor as causal agents. No stress is laid on the possibility of a calculous diathesis. Under the heading of the pathology of gallbladder disease the remarkable resources of the Mayo Clinic have been fully utilized, and it is indeed striking to read that between 1893 and 1937 nearly 30,000 removed gallbladders were examined in its laboratories. To those of us who have suffered disappointments in the management of cases recognized as of the strawberry gallbladder type it is rather comforting to read that this probably presents only "a phase in the normal excretion of cholesterol and is a part of the mechanism concerned with maintaining the cholesterol constant in the circulating blood."

From the consideration of this large amount of material it is interesting to find that there were only 103 gallbladders which showed evidence of malignant disease. The authors properly point out that the mortality of the removal of stones, though small, is nonetheless greater than the frequency of malignant disease following their presence. But after a review of so much material at close hand it is refreshing to be told that we can hope to get enlightenment on the main problems connected with the diseases of the biliary tract only if they are considered not alone but in connection with the disturbances of the body generally as well as possible associated lesions in the stomach, duodenum, pancreas, liver and large bowel. When the authors come to deal with diagnostic methods it is again comforting to find them insisting on the importance of the history and of ordinary methods of examination. They are conservative about the possible value of the duodenal tube but it would have been interesting to find more detailed information about the actual results of this method of investigation in the authors' own hands in the small group of cases in which it is probably the most important of the few methods of physical examination available.

After the general review of diagnostic methods we pass on to the consideration of the subject of cholecystography with the information that 95 per cent of diagnoses based on this method, whether the signs found are positive or negative, are correct. Nonetheless we are later reminded that the method is not to be looked on as a substitute for clinical examination or to supplant clinical judgment. When the authors write of intervention for noncalculous cholecystitis they emphasize that from clinical experience the result from the patient's point of view depends on whether or not intervention is for the relief of pain. They have found that when the symptoms have a more or less problematic connection with mild changes in the gallbladder the prospects of relief from surgical intervention are indeed small. In this as in other sections it would have been useful to have more of the personal experience of the authors rather than the views of the wealth of authorities which have been consulted and which are referred to in every portion of the book. In discussing cholangitis the authors are delightfully frank, a frankness which will be appreciated by those who have had experience of these cases, for they admit that it is extremely difficult to forecast the full extent of the disease and that secondary abscesses are often only the disclosure of the postmortem room. In treatment one is a little surprised that more stress is not laid on the importance of controlled biliary drainage with an open air and general anti-infection regimen. In the management of benign strictures of the bile duct few surgeons can have had so extensive an experience as Walters, and that makes the section on this particular subject of especial value, and one admires the restraint which the authors follow in talking about the results of surgical intervention in what is admittedly this serious complication. The descriptions of the operative procedures supported by excellent illustrations are good, although the difficulties might with advantage have been more emphasized.

The plan of making a temporary biliary fistula which can later be transplanted into the intestine is mentioned as a way out in difficult cases and is certainly safer than an endeavor to make an anastomosis or a reconstruction at all costs. The authors confess that in spite of an immediate mortality of 12.5 per cent relief of the obstruction and control of the infection can be looked for in only about 56 per cent of the cases. That is a state of affairs which cannot be overemphasized as an illustration of the extreme importance of the operation of cholecystectomy and the necessity for attention to every little detail that may render this terrible accident less frequent.

The chapter on the differential diagnosis of jaundice illuminates the well known difficulties of that subject and the fact that the authors stress the importance of its medical management again shows that they keep an open mind, probably engendered by their large experience of surgery in many unpromising conditions. In describing operations the authors are at their best, and what they say is obviously based on an extensive experience. When dealing with cholecystectomy it would have been better to emphasize in the illustrations the extreme importance of the visualization of the three ducts before what is supposed to be the cystic duct is caught or tied. This point is mentioned in the text, though it is not sufficiently stressed. The method of electrocoagulation is assigned its

proper place as one of the methods which may be used where partial cystectomy is called for. It is an operation which undoubtedly fulfils a place but with the remarkably low mortality which the authors can place before the profession there is nothing to justify its employment as a frequent substitute for the more formal operation of cholecystectomy. In the surgery of the common duct the T tube is warmly advocated, but nothing is said about the possible damage to the duct which may be inflicted during its removal. For stones that cannot be removed or that have been "left over" as demonstrated by cholangiography, Pribram's ether dissolving method is commended, but the method is likely to be infrequently called for and is regarded in its proper perspective. The review which the authors gave of the large numbers of operations on the biliary tract which were carried out in the Mayo Clinic during the years 1937-1938 is illuminating; the record is something to be proud of and furnishes standards to attain which others ought certainly to strive. In the operation of cholecystogastrostomy an opening 2 cm. in diameter is suggested, but it would have been well to point out that in these circumstances the anastomosis often contracts and that a much bigger opening, certainly one that freely admits the thumb, is probably none too large. The mournful outlook in intervention for malignant diseases of the pancreas with a mortality of more than 28 per cent cannot be looked on as surprising. W. J. Mayo used always to say that in doubtful conditions about the head of the pancreas an anastomosis was well worth while because there was always the chance that after all the diagnosis of cancer might be wrong, and that is an attitude which should be remembered by those responsible for dealing with these cases.

The chapter on the care of patients before and after operation is full and complete. The authors point out that the condition of the liver is really the key to the situation. Those who have taken most interest in this question will cordially agree with the statement that "to evaluate the general condition of the patient is not difficult, but to attempt to measure accurately the degree of hepatic function is still a baffling problem."

In the consideration of the after-results of cholecystectomy Howard Gray, one of the collaborators, states emphatically that erroneous diagnosis is probably one of the most important factors in the persistence of symptoms following the removal of the gallbladder and writes "The existence of postcholecystectomy syndromes emphasizes the necessity for conservatism in the performance of cholecystectomy."

This book, with its large number of references, is an encyclopedic guide to the literature of the subject, but its really valuable appeal is made when the personal experience of the authors is recounted, backed by the truly remarkable collective resources of the Mayo Clinic to which they owe allegiance.

Morphologische Veränderungen im Knochenmark und Blut bei akuten Blutungsanämien. Von Jarl Forssell. Acta medica Scandinavica, Supplementum CI. Paper. Pp. 239, with 38 illustrations. Helsingfors: Mercators Tryckeri, 1939.

This monograph is devoted to the study of the morphologic changes of the peripheral blood and bone marrow following acute hemorrhage in man. The bone marrow was aspirated at the sternum according to the method of Arinkin and from 0.1 to 0.2 cc. was aspirated. Differential counts were made from a study of 1,200 cells in each case. Peripheral blood studies were made during fasting, and blood from the finger was used. Complete studies were made, which included Price-Jones curves, cell volume and reticulocyte counts as well as the routine tests. Eighty-three cases were studied, subdivided into four groups: normal cases of twenty, sexes equal; eight normal women pregnant from two to eight months; fifty cases of acute hemorrhage following abortion from two to five months; cases of acute posthemorrhagic anemia due to gastric and duodenal ulcer, hemorrhoids and epistaxis. A brief summary of all the cases is given. The author presents numerous protocols of the blood examinations. The peripheral blood and bone marrow values agree with those recorded in medical literature. The eight normal pregnant women show peripheral blood values within normal limits except for a slight elevation of leukocytes and a moderate left shift of myeloid cells without neutrophilia. The results of the bone marrow study indicated that pregnancy did not produce a specific bone marrow pattern. The data from patients with acute hemorrhage are presented in tabular form and are discussed in detail. Liver therapy, arsenic and iron therapy in acute posthemorrhagic anemia are next considered. The author observed that in no case did the liver therapy produce an erythroblastic hyperplasia which was equal to that observed with iron and arsenic. The effect of arsenic on the bone marrow was difficult to explain. The results of the author's observations are summarized at the end of the monograph. The work represents a great deal of painstaking work and careful analysis. There are eight pages devoted to pertinent bibliographic references, fourteen pages containing thirty graphs, and four plates showing eight illustrations of bone marrow cells. The text includes forty-four tables and five diagrams. The monograph is of particular interest to the hematologist, who should derive much factual data from this comprehensive study.

On Oxidation, Fermentation, Vitamins, Health and Disease. By Albert v. Szent-Györgyi, M.D., Ph.D., D.H.C., Professor of Medical and Organic Chemistry, University of Szeged, Hungary. The Abraham Flexner Lectures Series Number Six. Published for Vanderbilt University. Cloth. Price, $2. Pp. 109, with 14 illustrations. Baltimore: Williams & Wilkins Company, 1939.

The volume contains the five lectures comprising the sixth series of Abraham Flexner lectures delivered by Dr. Albert v. Szent-Györgyi in 1939. They represent a summary of Dr. Szent-Györgyi's experiments in the field of biologic oxidation. The book covers the field of oxidation and includes vegetable oxidation. Its climax is the fifth chapter, or lecture, on vitamins, health and disease. The second and third lectures deal with the respiration of muscles and with fermentation, thus giving a smooth transition to vegetable oxidation. The author presents chiefly his own researches, but he brings them into proper perspective as parts of a broad review of the biochemical basis of life. It may be stated that Dr. Szent-Györgyi elevated himself with these lectures to one of the "praeceptores mundi." The brilliance of his style, the clear and fascinating presentation of the subject, makes the reading of this small volume an exceptional delight. The author leads along the fields of biologic oxidation with an ease which enables one to understand the subject even without a particular knowledge of biochemistry.

The Toothbrush: Its Use and Abuse. A Treatise on Preventive Dentistry and Periodontia as Related to Dental Hygiene. By Isador Hirschfeld, D.D.S., F.A.A.P., Associate Professor of Dentistry, Department of Periodontia, School of Dental and Oral Surgery, Columbia University, New York. Cloth. Price, $7.50. Pp. 591, with 415 illustrations. Brooklyn, New York: Dental Items of Interest Publishing Company, Incorporated; London: Henry Kimpton, 1939.

This textbook, as the name implies, is developed about the toothbrush and the important part it plays in preventive dentistry and the maintenance of oral cleanliness. The first chapter deals with the evolution of the toothbrush starting from before the Christian era and leading up to present times. This includes many illustrations of ancient articles, both brush type and pick type, which were used in attempting to maintain mouth hygiene. Obviously little advancement has been made in the last hundred years as far as toothbrush design is concerned. Formulas of early dentifrices are also given in this chapter.

The next portion of the book is divided into two main parts: the effects, beneficial and harmful, of the toothbrush on the soft tissue and the effects of the toothbrush on tooth structure itself. The first part includes such conditions as suppurative periodontoclasia, chronic marginal gingivitis and chronic hypertrophic gingivitis, along with many types of traumatizations due to improper handling of the brush and the use of certain dentifrices and mouth washes. The second part includes dental caries in its relation to the toothbrush and abnormalities found on the teeth which may be aggravated by or are definitely caused by the brush. All the conditions referred to in the text are well illustrated, showing cases before and after treatment in which the use of the toothbrush was an important factor. Dr. Hirschfeld points out in this section the importance of determining the cause of abnormalities in the mouth and the methods by which these determinations can be made. This portion of the book is interesting and beneficial to the dental practitioner as it covers almost every type of mouth abnormality which might be aided or abetted by the use of the toothbrush. The chapters on dental caries and food impactions are also well

written and illustrated, showing proper methods of prevention of both, using restorative measures and the toothbrush.

The remainder of the book deals with methods of tooth brushing, along with types of dentifrices and mouth washes, both beneficial and harmful. These few chapters would be helpful to the layman as they are simply written; the fact that they deal also with commercial mouth washes and stain removers, many of which are harmful, would make them interesting reading for almost any one.

Although many conditions are discussed which have no definite bearing on the brush, they are nevertheless all important factors which come under the heading of mouth hygiene and preventive dentistry. The easy reading and good illustrations of everyday oral disease make the book a valuable reference book for dental students and dentists.

Exercise and Keep Fit. By Terry Hunt. Foreword by Ernst Lubitsch. Cloth. Price, $1.96. Pp. 202, with illustrations. New York: Prentice-Hall, Inc., 1940.

The author of this book is said to be "Hollywood's ace conditioner of movie stars and business executives," and his breezily written pages are the lineal descendants of a long line of ancestors written by trainers who have been successful in the handling of newsworthy Americans. He does not pretend to medical knowledge and yet most of what he has written in this volume would be accepted as sound advice by those who have such knowledge. Some of it would not. For example, he adjures the reader to "increase resistance to illness by deep breathing in fresh air" and to "take a hot soap bath at least once a week before retiring" and to "give your body a good rubbing with ordinary table salt once a week." There would be considerable doubt among the medical men as to the efficacy of the first, many persons would be kept awake by a really hot bath before retiring, and probably a rub with a rough towel would be quite as helpful as one with salt. The first part of the book gives advice on muscular development, diet, the emotions, sleep, cathartics, care of the skin, the feet and posture—the kind of thing which has been printed in the innumerable books on personal hygiene. And the advice is good! The last part gives illustrated calisthenic exercises, many of the pictures being posed by cinema stars or successful business or professional men. The exercises are not new nor are they any better or worse than those which have appeared in many earlier books of the sort. The final chapter concerns itself with a list of the names and some of the characteristics of the great and near-great persons trained by the author. Possibly the implication is that one who takes the prescribed exercises will be great or near-great. On the whole it is a readable presentation of material, good in the main, which has been printed in a much more scientific, complete and dependable form in many other volumes, such as those by Dr. Jesse Williams.

Fundamentals of Biochemistry in Relation to Human Physiology. By T. R. Parsons, B.Sc., M.A. Sixth edition. Cloth. Price, $3. Pp. 461, with 26 illustrations. Baltimore: William Wood & Company, 1939.

"When we possess . . . the knowledge . . . of the architecture of the living matter . . . we may be able to give a rational explanation of the circumstance that the world of difference between maleness and femaleness depends on the presence or absence of nothing more romantic than an extra hydroxyl or methyl group, or a double bond more or less, associated with the same all pervading sterol skeleton." With this dream of a great scholar ends the new chapter added to the sixth edition of the book. The other chapters too gained lesser emendations at points where the earlier account needed revision, and according to these revisions the bibliography of various chapters has been improved, some obsolete books having been omitted and newer publications substituted. The new chapter has grown out of a brief supplement of the chapter (VIII) about fats and their metabolism. This supplement said only a few words about the structure of cholesterol and some derivations of the sterol skeleton, the ergosterone, androsterone and estrone. The new chapter (IX) gives a brief report about sterols and steroids. After having demonstrated the essential skeleton of the molecule of cholesterol, i. e. the skeleton of all sterols, the author shows the derivation from the same root of ergosterol, estrone, progesterone, androsterone and corticosterone. He emphasizes the fact that in case of some sterols, as estrone and androsterone, the corresponding secondary alcohol is several times as potent as the ketone itself. The book in its improved and somewhat augmented form is a true guide, as it was in its earlier publications, in the field of biochemistry.

Minor Surgery. By R. J. McNeill Love, M.S., F.R.C.S., Surgeon, Royal Northern and Metropolitan Hospitals, London. Cloth. Price, 12s. 6d. Pp. 369, with 155 illustrations. London: H. K. Lewis & Co., Ltd., 1940.

This is a pocket size but excellent work on the subject. However, as the author himself indicates, it is a rather difficult task to determine what is "minor" and what is "major" in surgery. It seems that a discussion of history taking as it pertains to duodenal ulcer or cholelithiasis is completely out of place in a work called "Minor Surgery." The same applies to examination for acute abdominal conditions, preparation of the patient for operation, and the technic of cystoscopy or operation for hydrocele. Yet when one considers that the purpose of this volume is to be a guide to hospital residents called on to deal with common emergencies or minor surgical problems, it is understandable and forgivable. The title, however, may be changed to "Surgical Manual for Hospital Residents." The book is written unusually well, in clear concise language. The material is entirely abreast of the time from both the diagnostic and the technical point of view. A great deal of subject matter is included between the covers of this small volume. The illustrations are adequate and illuminating. The book is highly recommended for the purpose intended.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Malpractice: Administration of Atropine for Plastic Iritis or Glaucoma; Alleged Abandonment of Patient.—About April 1, 1934, Saunders, a man slightly over 50, consulted the defendant physician, an eye, ear, nose and throat specialist, relative to an ailment of his left eye. The physician diagnosed the plaintiff's ailment as plastic iritis and instituted a course of treatments with atropine. The patient visited the physician's office two or three times a week for observation and treatment. On May 22 or 23, after examining the patient's right eye on request, the defendant administered "some treatment to the right eye, and from then on it never cleared, and excruciating pain and agony was felt by the plaintiff." Thereafter the physician treated both eyes. In June the patient lost his vision in both eyes, which loss apparently was permanent. Some time in October he became unable physically to continue his visits to the defendant's office. According to the patient, during October and November, by telephone, he repeatedly urged the defendant to call on him at his home, but the defendant refused to do so. A general practitioner, Dr. Bryans, informed the defendant that he had visited the patient after the defendant's refusal and had found him nauseated, weak and suffering from severe pains in his head. On December 1, Dr. McLane, an eye specialist, was called. He found the patient suffering from glaucoma, a condition characterized by a hardening of the eyeball. Subsequently the patient sued the defendant physician for malpractice, alleging, in effect, that the bad result was due to the unskilful and negligent manner in which the defendant had attended and treated him. The trial court directed a verdict for the physician and the patient appealed to the Supreme Court of Florida, Division B.

At the trial there was uncontradicted medical testimony that (1) the administration of atropine is the recognized standard treatment for plastic iritis, but that if such drug is administered the physician must see and observe the patient every forty-eight to seventy-two hours in order to check or test the intraocular "tension" or pressure; (2) if a patient appears to be hypersensitive to atropine, or any other drug, due care requires that a close check be kept and the drug changed so as not to cause the patient pain or agony; (3) a glaucomatous eye first appears red and later white, and the eyeball, while its shape may or may not be changed, has a tendency to appear to be pushed outward; (4) glaucoma in its early stages may be reme-

died by drugs or surgery; (5) plastic iritis, an involvement of the iris with adhesions, frequently develops into glaucoma, and (6) in the locality in question it is customary for a physician to visit his patient when the latter is physically unable to come to the physician's office.

It is not clear from the published report whether or not the facts just stated were sufficient to require the trial court to permit the jury to pass on the question of the alleged negligence of the defendant physician. Relying chiefly on 48 Corpus Juris, par. 113, pp. 1125, 1126; par. 115, pp. 1128, 1129 and par. 116, p. 1129, the Supreme Court discussed the general rules of law relating to (1) the burden which rests on the plaintiff in a malpractice suit to show that the defendant was unskilled or negligent and that his unskilfulness or negligence resulted in harm to the plaintiff, (2) the liability of a physician for an erroneous diagnosis and (3) the duty of a physician, in the absence of an agreement to the contrary, to continue in attendance until dismissed by the patient, or until his services are no longer required, or until he has properly withdrawn from the case after giving the patient reasonable notice. Referring to the defendant's contention that during the period of his treatment the patient's ailment was iritis and that there was but little intra-ocular pressure present, the Supreme Court called attention to the trial court's refusal to permit Dr. McLane to answer the following hypothetical question propounded to him:

> Doctor, from his condition of the glaucoma and with a hypothesis that in July and September a layman observed the conical shape and pressure of his eye, how long would you say that glaucoma had existed at the time you saw him?

If the trial court had permitted Dr. McLane to answer this question a possible conflict of opinion would have developed which would have required the trial court to submit the matter to the jury. In fact, there already was a dispute as to the appearance of the diseased eye. Likewise, an inference could have been drawn that the pain and agony suffered by the plaintiff was due to the atropine as prescribed, and that if the defendant had contacted his patient at more frequent intervals this condition could have been alleviated. If, concluded the court, the evidence is conflicting or will permit of different reasonable inferences, or if there is evidence tending to prove the issues, it should be submitted to the jury for its determination as a question of fact and not taken from the jury and passed on by the court as a question of law.

Accordingly, the Supreme Court reversed the judgment of the trial court and, in effect, ordered the case retried.—*Saunders v. Lischkoff (Fla.), 188 So. 815.*

Workmen's Compensation Acts: Death from Torulosis Allegedly Aggravated by Trauma.—In the course of his employment, December 19, the workman was struck on the head by a ladder and sustained a scalp wound. He was taken immediately to a physician who treated his wound. He returned for further treatments on December 21 and 24. He continued his usual employment until January 19, although his capacity for work was perceptibly impaired. He complained of pain in his head, his condition became progressively worse and he was "very weak and very thin" and could not walk without staggering from side to side. He was admitted to a hospital January 31 where he died February 28. A referee awarded his widow compensation under the Minnesota workmen's compensation act, and the employer and his insurer appealed to the industrial commission of Minnesota.

An autopsy was performed at which were present all the medical expert witnesses who subsequently testified at the hearing before the commission. Sections were removed from the brain and spinal cord for microscopic examination. It was concluded that death resulted from torulosis (an infection with Torula, a fungus), involving the central nervous system, and that the disease was present prior to the time of the injury. At the hearing a pathologist, called by the employer and his insurer, emphatically insisted that the workman died as a result of torulosis and that the accident in no way contributed to his death. Three physicians, on the other hand, testifying for the widow, agreed that the industrial accident aggravated the pre-existing condition of torulosis to such a degree that death was attributable thereto. It was agreed by all these medical witnesses that torulosis is such an extremely rare disease that less than sixty cases had been recorded in medical history and their actual experience with respect to this condition was limited to this particular instance. A "neutral pathologist," appointed by the commission, after reviewing the entire record of testimony and microscopically studying the sections taken from the workman's brain and spinal cord, testified that the primary cause of death was torulosis and added:

> The fact that the development and advance of the disease is dependent upon the immunity of the individual; because there is reasonable evidence to show that there was trauma to the brain; because trauma can produce situations similar to those which favor the growth of the organisms, and thus disturb the balance against any prior resistance; and because of the sudden appearance of symptoms following the trauma in an individual supposedly previously well, it is my opinion that there exists a reasonable probability that the injury aggravated the disease.

The commission then awarded compensation to the widow, and the employer and his insurer appealed to the Supreme Court of Minnesota.

The appellants contended that the record did not sustain a finding of causal connection between the industrial injury received and the workman's death. They argued that since the pathologist who testified in their behalf was "exceptionally qualified" his opinion was entitled to more weight than that of the medical witnesses called by the widow, who did not claim to be "expert pathologists." The fact, said the Supreme Court, that the pathologist called by the appellants was "exceptionally qualified" does not permit this court to cast aside the opinion of the other expert witnesses. It was for the commission, the triers of fact, to determine what must be, in its very nature, a fact issue. It was the opinion of the court that as a court of review it was necessarily limited to a determination of whether there was sufficient evidence to sustain the result reached by the commission.

It may be conceded, continued the court, that the workman's disease was present in his body at and prior to the time of the accident but that was not conclusive against a finding of liability, since the application of the workmen's compensation act is not restricted only to those who are normal or strong in body. The act does not exclude the weak or physically unfortunate. Latent and unknown tendencies to disease are common and the legislature in passing this law must have had in mind the fact that such latent ailments or maladies may develop into serious conditions if incited to activity by what might otherwise be regarded as trivial accidental injuries in the course of employment. If the workman's infirmity or disease was in fact accelerated by the injuries to his head, as the commission found, his widow was entitled to recover compensation, not on the theory that the injuries caused the disease that already existed but because of the effect of such injuries on that disease. The court held that it was bound by the commission's finding because, while this might be a "borderline" case, it did not believe that the opinions of the physicians who testified for the widow were so inconsistent with reason and common sense as to justify it in rejecting them. Accordingly the award of compensation in favor of the widow was affirmed.—*Westereng v. City of Morris (Minn.), 285 N. W. 717.*

Society Proceedings

COMING MEETINGS

American Congress of Physical Therapy, Cleveland, Sept. 2-6. Dr. Richard Kovacs, 2 East 88th St., New York, Secretary.
Colorado State Medical Society, Glenwood Springs, Sept. 11-14. Mr. Harvey T. Sethman, 537 Republic Bldg., Denver, Executive Secretary.
Idaho State Medical Association, Sun Valley, Sept. 11-14. Dr. J. N. Davis, 204 Fourth Ave., East, Twin Falls, Secretary.
National Medical Association, Houston, Tex., Aug. 12-16. Dr. John T. Givens, 1108 Church St., Norfolk, Va., General Secretary.
Utah State Medical Association, Ogden, Aug. 29-31. Dr. D. G. Edmunds, 610 McIntyre Bldg., Salt Lake City, Secretary.
Virginia, Medical Society of, White Sulphur Springs, W. Va., July 29-31. Miss Agnes V. Edwards, 1200 East Clay St., Richmond, Secretary.
Washington State Medical Association, Tacoma, Aug. 26-28. Dr. V. W. Spickard, 1305 Fourth Ave., Seattle, Secretary.
West Virginia State Medical Association, White Sulphur Springs, July 29-31. Mr. Joe W. Savage, Public Library Bldg., Charleston, Executive Secretary.
Wyoming State Medical Society, Sheridan, Aug. 11-13. Dr. M. C. Keith, State Department of Health, Cheyenne, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1930 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Heart Journal, St. Louis

19:513-638 (May) 1940

*Production of Pressor Substance by Totally Ischemic Kidney. A. C. Taquini, Buenos Aires, Argentina.—p. 513.
Two Unusual Types of Electrocardiograms. H. B. Weinberg and L. N. Katz, Chicago.—p. 519.
Immediate Effects of Intravenous Administration of Neoarsphenamine on Electrocardiogram in Cases of Syphilitic Aortitis. C. L. Tung and J. W. Mu, Peiping, China.—p. 529.
Responses of Blood Vessels in Resting Hand and Forearm to Various Stimuli. D. I. Abramson and E. B. Ferris Jr., Cincinnati.—p. 541.
Effect of Certain Drugs on Coronary Blood Flow of Trained Dog. H. E. Essex, R. G. E. Wegria, J. F. Herrick and F. C. Mann, Rochester, Minn.—p. 554.
Studies on Mercurial Diuresis: III. Alteration Induced in Cerebrospinal Fluid Pressure. I. F. Volini and R. O. Levitt, Chicago.—p. 566.
Study of Precordial Leads in Subjects with Congenital Dextrocardia and Situs Inversus Viscerum. A. T. Ogaard, N. W. Voorhies, G. E. Burch and S. C. Cordill, New Orleans.—p. 571.
Clinical Comparison of Crystalline Glucosides of Digitalis Lanata (Digilanid) and Powdered Leaf of Digitalis. W. Adams and L. Gregg, Chicago.—p. 576.
Bacterial Endocarditis Superimposed on Syphilitic Aortic Valvulitis: Review of Literature and Presentation of Five Cases. J. Wright and Pearl M. Zeek, Cincinnati.—p. 587.

Production of Pressor Substance by Ischemic Kidney.—Taquini performed experiments on dogs to learn whether the totally ischemic kidney can produce arterial hypertension, whether it produces a pressor substance and, if there is such a substance, the mechanism of its action. He produced total renal ischemia in ten dogs. In five in which renal circulation was reestablished, after from five and one half to six and one half hours of total ischemia an increase in arterial pressure resulted. In five dogs whose renal circulation was not reestablished the arterial pressure remained unchanged. He grafted sixteen totally ischemic kidneys into the necks of sixteen normal dogs to learn how the hypertension is produced. He found that in ten experiments, when the ischemia was complete, there was a definite rise of blood pressure in nine of the recipient dogs; in the other six experiments, in which the ischemia was not complete, in four because of the remaining collateral circulation and in two because only one of the two renal arteries supplying each kidney was occluded, grafting produced no change in blood pressure. The fact that the totally ischemic kidney liberates a pressor substance into the blood has been confirmed by direct injection of blood from the renal vein. One kidney pedicle of the dog was clamped for six hours, after which blood was collected from this and from the other kidney vein. Blood (100 cc.) from the clamped kidney was injected and a definite rise was observed, whereas normal blood produced no change in blood pressure. It appears that acute, complete ischemia of the kidney produces a pressor substance, as does the partially ischemic kidney. The substance liberated by kidneys which have been rendered acutely and totally ischemic acts like that produced by the partially ischemic kidney directly on the peripheral vascular system causing vasoconstriction and hypertension.

American Journal of Clinical Pathology, Baltimore

10:319-360 (May) 1940

Placental Infarction and Eclampsia. H. F. Hunt, W. B. Patterson and R. E. Nicodemus, Danville, Pa.—p. 319.
Luetic Meso-Aortitis with Aneurysm of Thoracic and Abdominal Aorta: Case Report. A. Levitt and D. S. Levy, Buffalo.—p. 332.
Cryochem-Preserved Complement of Guinea Pig Serum. E. W. Flosdorf, F. Boerner, M. Lukens and T. S. Ambler, Philadelphia.—p. 339.
Symptomless Renal Fibrosarcoma with Spinal Metastases: Report of Case. W. L. McNamara, H. D. Smith and W. A. Gore, Los Angeles. —p. 345.

American Journal of Medical Sciences, Philadelphia

199:601-748 (May) 1940. **Partial Index**

*Studies on "Essential" Hypertension: III. Effect of Nephrectomy on Hypertension Associated with Organic Renal Disease. H. A. Schroeder and G. W. Fish, New York.—p. 601.
Role of Kidney in Pathogenesis of Arterial Hypertension. E. Dicker, Brussels, Belgium.—p. 616.
Essential Hypertension: Comparison of Hypertensive and Nonhypertensive Phases Following Coronary Thrombosis. H. Gross and H. Engelberg, New York.—p. 621.
*Painless Myocardial Infarction. H. M. Pollard and T. H. Harvill, Ann Arbor, Mich.—p. 628.
*Etiology of Idiopathic Pneumothorax. H. J. Lorge, Rutland, Mass.—p. 635.
Negative Results of Irradiation Therapy of Pylorus and Brunner's Gland Area in Patients with Polycythemia Vera. K. W. Stenstrom, P. H. Hallock and C. J. Watson, Minneapolis.—p. 646.
Use of Intravenous Sodium Chloride in Pyrotherapy. E. E. Rosenberg and N. N. Epstein, San Francisco.—p. 650.
Rotenone in Treatment of Scabies: New, Nonodorous, Nonirritating Form of Treatment—Preliminary Report. Carmen C. Thomas, Philadelphia, and Evelyn E. Miller, Vineland, N. J.—p. 670.
Absorption of Sulfanilamide as Index of Blood Flow in Intestine of Man. E. A. Stead Jr. and P. Kunkel, Boston.—p. 680.
Vitamin A Status of Families in Widely Different Economic Levels. Pauline Beery Mack and Agnes Pauline Sanders, State College, Pa. —p. 686.
Relationship of Dietary Intake of Nicotinic Acid to Coenzyme I Content of Blood. A. E. Axelrod, E. S. Gordon and C. A. Elvehjem, Madison, Wis.—p. 697.
Influence of Season on Severity of Diabetes and Its Sclerotic Complications. L. B. Owens and C. A. Mills, Cincinnati.—p. 705.
Effects of Cigaret Smoking and Deep Breathing on Peripheral Vascular System: Studied by Five Methods. M. G. Mulinos and I. Shulman, New York.—p. 708.

"Essential" Hypertension and Organic Renal Disease.—From their observations on seven patients, Schroeder and Fish conclude that removal of a diseased kidney does not consistently alter the course of arterial hypertension in a favorable direction. Only two patients were definitely improved. These results indicate that the injured kidney was not the sole source of hypertension and that other factors may occasionally be of some importance. However, removal of a kidney was followed by a lower blood pressure level of all patients for weeks or months. It is difficult to believe that any major surgical procedure would have produced this result, as in some the improvement was prolonged, but in one instance a further operation, partial gastrectomy, caused a rise in blood pressure. Some change in the pathologic physiology of the circulation occurs after nephrectomy, which the authors believe is due to the removal of at least one factor causing hypertension. All kidneys removed from these patients showed in addition to inflammatory and noninflammatory lesions varying degrees of arterial and arteriolar sclerosis. The least degree of vascular disease was found in the two patients with the best results. However it is not certain that the degree of vascular disease in one kidney is the same as that in the other. There was a marked difference in one case. With the exception of one case, favorable results appeared proportional to the amount of disease of the renal arteries. Further evidence that renal lesions are not the sole cause of arterial hypertension is their presence when the arterial pressure is not elevated. Continuance of an elevated blood pressure after the affected kidney is removed may be explained by the part vascular or other disease in the remaining kidney plays. The authors suggest the following criteria for selection of essential hypertensive cases suitable for therapeutic nephrectomy: 1. It should be known that the arterial hypertension is recent. The time is arbitrarily set at two years. 2. The renal lesion should be confined to one kidney, decreasing its function. 3. Renal function should be within normal limits. 4. Retinitis should be absent and changes in the caliber of the retinal vessels should be minimal. 5. Arterial pressure should be persistently elevated. Unless suitable cases are selected, many kidneys may be removed needlessly without benefit. Patients with long standing hypertension with a so-called malignant course are not good subjects for this form of therapy.

Painless Myocardial Infarction.—Pollard and Harvill determined the frequency of painless coronary occlusion in 375 cases of coronary occlusion. The determination was based on clinical features, electrocardiographic observations and available necropsy material. There were seventeen instances (4.5 per cent) of undoubted coronary occlusion in which no pain, substernal pressure or other "anginal" symptoms had occurred at

any time. In another fifteen cases (4 per cent) there had been no pain or anginal symptoms, but myocardial infarction was strongly suspected even though the electrocardiographic signs were not pathognomonic. Among the symptoms which occurred at the time of the accident in the seventeen undoubted cases, the most common were dyspnea, nausea and vomiting, dizziness and fainting or collapse.

Etiology of Idiopathic Pneumothorax.—Lorge cites nine cases of idiopathic pneumothorax which support Kirshner's conception that the disease will "occur in young people who rarely show emphysema and spare the aged in whom emphysema is fairly common," that idiopathic pneumothorax may be the result of "a congenital pleural defect or an acquired pleural defect with a congenital anlage" and that the formation of pleural blebs may be a secondary manifestation of a primarily weakened pleura. The cases reported strongly suggest that in the idiopathic form of spontaneous pneumothorax one is dealing with a primary constitutional inferiority of the pleural structure. One or more attacks of spontaneous pneumothorax were precipitated in the nine patients by petty causes or no evident cause. One patient died after hemopneumothorax. The other eight patients were clinically well after the collapsed lung had reexpanded. No tuberculosis or any other lesion could be demonstrated. None of the nine patients were more than 46 years of age, seven were less than 35, four less than 25. This obvious incidence of the disease among the young should exclude pulmonary emphysema as an etiologic factor. Its occurrence in women is considered an exception. The author's nine patients were male. Age and sex incidence thus suggest a constitutional factor. In the majority of cases complete collapse is the rule. This is explained by the absence of adhesions between the parietal and visceral pleural leaves. No adhesions were demonstrable in the eight well patients. In the majority of cases evidence of effusion was absent; this again suggested functional impairment of the pleura. Considering the sluggishness of the pleural response, repeated collapse of the same lung is not surprising. In spontaneous or artificial collapse of the lung the pleural leaves tend to become adherent to one another after reexpansion has taken place. This does not seem to be the case in idiopathic pneumothorax. Idiopathic pneumothorax is thus apt to appear in the form of recurrent pneumothorax. The familial occurrence of idiopathic pneumothorax is in favor of its being a constitutional disease.

American J. Obstetrics and Gynecology, St. Louis

39:733-918 (May) 1940. **Partial Index**

Decidua-like Changes in Endometrium Without Pregnancy. R. W. Te Linde, Baltimore, and E. Henriksen, Los Angeles.—p. 733.
Salt Poor Diet and Its Effect on Labor. E. E. Wadlow, St. Joseph, Mo.—p. 749.
*Advanced Abdominal Pregnancy, with Special Reference to Management of Placenta, with Report of Three Cases and Review of Literature. L. W. Mason, Denver.—p. 756.
Effects of Diethyl Stilbene (Stilbestrol) on Menopausal Symptoms. J. Huberman and M. J. Colmer, Newark, N. J.—p. 783.
Hematometra and Hematocolpos Following Administration of Stilbestrol. A. W. Diddle and W. C. Keettel, Iowa City.—p. 791.
Treatment of Senile Vulvovaginitis with Estrogenic Ointment. D. R. Mishell, Newark, N. J., and L. Motyloff, New York.—p. 796.
Pregnancy and Heart Disease. N. Flaxman, Chicago.—p. 814.
Vitamin B_1 Deficiency as Etiologic Factor in Pregnancy Toxemias: Part II. A. C. Siddall, Oberlin, Ohio.—p. 818.
Roentgenologic Survey of Chest in Pregnant Women. H. J. Perlberg, Jersey City, N. J.—p. 826.
Cancer and Fibromyomas of Uterus. D. D. Bowers, Indianapolis.—p. 830.
Pregnancies After Nephrectomy for Tuberculosis. E. Lissack, Concordia, Mo.—p. 854.
Technic for Aspirating Viable Spermatozoa from Cavity of Uterus as Further Study in Sperm Behavior: Preliminary Report. A. I. Weisman, New York.—p. 875.
Prenatal Injury of Fetus. H. A. Schwartz, New York.—p. 881.
Anterior Pituitary Test for Early Pregnancy. H. G. Hadley, Washington, D. C.—p. 894.

Management of Placenta in Advanced Abdominal Pregnancy.—Mason reports three cases of advanced abdominal pregnancy and reviews the sixty-six cases reported in the English literature from 1933 to 1939. The condition, while not common, is not as rare as is generally supposed. A correct preoperative diagnosis is made in considerably less than half of the cases. The several constant factors that are of value in the diagnosis of late abdominal pregnancy are: (1) a history of signs and symptoms of early ectopic pregnancy with probable tubal abortion, (2) fetal movements that are unusually noticeable and painful to the mother, (3) the unusual ease with which the fetus can be palpated, (4) malaise and general disability unexplained by the pregnancy itself, (5) the resemblance of the cervix to the nonpregnant cervix, (6) frequently a history of beginning labor which persisted for a time and ceased and (7) the uterus, which is frequently palpable. The presence of any one of these factors should bring to mind the possibility of an abdominal pregnancy. In the management of such a pregnancy if the placenta is so situated that it can be easily removed, without damage to vital structures or undue consumption of time and when the circulation can be easily and completely controlled, this should be done and the abdomen closed without drainage. If easy removal is not possible or probable, no attempt should be made to remove the placenta, and again the abdomen should be closed without drainage. Marsupialization of the placenta or drainage of the abdomen with the placenta left in appears to be the worst treatment of all. Necrosis of the placenta and membranes is a physiologic process and should not of itself be an indication for drainage. Mortality (14.3 per cent in the series of Cornell and Lash and 18.8 per cent in the present sixty-nine cases) and morbidity rates for the condition are much higher than they need be. Earlier recognition by having the possibility in mind, dangerous and futile attempts to "induce labor" and better surgical judgment at the time of operation, chiefly in regard to management of the placenta, should lower the mortality rate.

American Journal of Ophthalmology, St. Louis

23:617-734 (June) 1940

Ocular Complications of Meningococcic Meningitis: Observations in 350 Cases. P. M. Lewis, Memphis, Tenn.—p. 617.
Studies on Infectivity of Trachoma: X. Frequency and Distribution of Inclusion Body and Its Possible Relation to Pathogenesis. L. A. Julianelle, St. Louis.—p. 633.
Essential Progressive Atrophy of Iris: Report of Case. J. W. Henderson and W. L. Benedict, Rochester, Minn.—p. 644.
The American Board of Ophthalmology. W. B. Lancaster, Boston.—p. 651.
Field Changes After Satisfactory Filtration Operations for Glaucoma. J. W. Burke, Washington, D. C.—p. 657.
Sulfanilamide and Neoprontosil in Treatment of Trachoma. R. D. Harley, A. E. Brown and W. E. Herrell, Rochester, Minn.—p. 662.
Edward Delafield: A Sketch. B. Samuels, New York.—p. 670.
*Treatment of Trachoma with Sulfanilamide: Report of Thirty-One Cases. P. Thygeson, New York.—p. 679.

Sulfanilamide in Trachoma.—Thygeson reports that, since March 1938, all trachoma patients seeking treatment at the Vanderbilt Clinic and Institute of Ophthalmology have received sulfanilamide. Of thirty-one who have completed their course sixteen were healed, eleven showed satisfactory improvement and four exhibited little or no change. The drug appeared to be most efficacious in the early cases and when employed in relatively high dosages, but healing was obtained in long-standing cicatricial cases and in some in which low doses were given over a relatively long period. Sulfanilamide effected rapid disappearance of the epithelial cell inclusions characteristic of active trachoma but seemed to have little influence on secondary bacterial infection caused by Haemophilus influenzae, Diplococcus pneumoniae or Staphylococcus aureus. Corneal lesions responded more rapidly than the conjunctival, and papillary hypertrophy regressed much more rapidly than follicular hypertrophy.

American Journal of Physiology, Baltimore

129:227-504 (May) 1940. **Partial Index**

Radioactive Phosphorus as Tracer in Anaerobic Muscular Contraction. J. Sacks, Ann Arbor, Mich.—p. 227.
Cyclic Penetrability of Human Cervical Mucus to Spermatozoa in Vitro. J. K. Lamar, L. B. Shettles and Eleanor Delfs, Baltimore.—p. 234.
Relation of Plasma Potassium Level to Metabolic Activity. G. Brewer, Philadelphia.—p. 245.
Renal Excretion of Sucrose in Normal Man; Comparison with Inulin. K. Steinitz, Istanbul, Turkey.—p. 252.
Effects of Adrenalin on Tubal Contractions of Rabbit in Relation to Sex Hormones (Study in Vivo by Rubin Method). A. M. Davids and M. B. Bender, New York.—p. 259.
Effect of Changes in Muscle Electrolyte on Response of Skeletal Muscle to Tetanic Stimulation, with Particular Reference to Potassium. H. C. Miller and D. C. Darrow, New Haven, Conn.—p. 264.
Changes in Cholesterol Content of Hepatic Bile Subjected to Gallbladder Activity. Cecilia Riegel, D. G. Calder and I. S. Ravdin, Philadelphia.—p. 271.
Action of Osmotically Active Substances on the Heart Rate. C. R. Spealman.—p. 293.

American Journal of Public Health, New York

30:463-588 (May) 1940

Dust Control in Rock Drilling. L. Greenburg, T. F. Hatch, W. J. Burke and W. B. Harris, New York.—p. 463.
Automatic Control of Pasteurization: Advantages and Safeguards. A. W. Fuchs, Washington, D. C.—p. 477.
Evaluation of Cancer Control Methodology. Eleanor J. Macdonald and Frances A. Macdonald, Boston.—p. 483.
Integrating Industrial Hygiene with Local Health Service. L. M. Graves, A. H. Fletcher, Memphis, Tenn.; and C. Pharris, Nashville, Tenn.—p. 493.
Suggested Grouping of Slow Lactose Fermenting Coliform Organisms. C. A. Stuart, Providence, R. I.; F. L. Mickle and E. K. Borman, Hartford, Conn.—p. 499.
Jaundice in Detroit. J. G. Molner and K. F. Meyer, San Francisco.—p. 509.
Community Health Education. I. V. Hiscock, New Haven, Conn.—p. 516.
Healthier Health Meetings. W. W. Bauer, Chicago.—p. 523.
Some Developments in the Water Pollution Research Program of the Public Health Service. J. K. Hoskins, Cincinnati.—p. 527.
Weekly and Seasonal Trends of Upper Respiratory Infections in Group of 2,000 Students. F. Sargent, Cambridge, Mass.—p. 533.
*The Problem of the Gonococcus Carrier. C. M. Carpenter and R. S. Westphal, Rochester, N. Y.—p. 537.
Staff Education Through Study of Malnutrition in School Children. G. M. Wheatley, Astoria, N. Y.—p. 542.

The Gonococcus Carrier.—Carpenter and Westphal investigated the duration of the gonococcus carrier state of 1,061 inmates of a penal institution. The inmates were under rigid supervision and their period of incarceration was long enough to make the observations significant. Of the 937 white males 330 (35 per cent) had gonococcic infection and of the 124 Negroes sixty-two (50 per cent) gave a positive history. Not a single case of acute infection was observed during the nine months of the study. Eleven carriers of the gonococcus were disclosed, all white men. Three patients had symptoms of gonococcic infection and eight presented clinical evidence of the disease. Neisseria gonorrhoeae was isolated in culture from each carrier. Smears were negative in every instance except one. The cultures were recovered from urethral exudate, prostatic secretion and/or urinary sediment. Strains of Neisseria pharyngis sicca and Neisseria catarrhalis were isolated from the genito-urinary tract of two of the carriers and thirteen other men. Physical examination revealed no anatomic or clinical signs that explained why the eleven carriers continued to harbor the gonococcus. The longest proved carrier state was seven years and two months. The importance of accurate laboratory methods of diagnosis cannot be overemphasized.

Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill.

43:629-804 (May) 1940

Malignant Tumors of Kidney in Adults. C. L. Gillies, Iowa City.—p. 629.
Anomalies of Urinary Tract. W. J. Baker, Chicago.—p. 636.
Ureteral Obstruction. B. H. Nichols, Cleveland.—p. 649.
Pyelovenous Backflow. W. L. Kilby, Baltimore.—p. 659.
Lateral Pyelography. E. L. Shiflett and D. Y. Keith, Louisville, Ky.—p. 664.
Calculus in Urachus: Report of Case with Enuresis. G. M. Wyatt and T. H. Lanman, Boston.—p. 673
Pulmonary Lesions After Roentgen and Radium Irradiation. R. B. Engelstad, Oslo, Norway.—p. 676.
*Radiation Reaction in Lung. S. Warren and J. Spencer, Boston.—p. 682.
Primary Lymphosarcoma of Hard Palate. L. J. Freedman, New York.—p. 702.
Carcinoma of Anus. O. N. Meland, Los Angeles.—p. 706.
Surface Applications of Radon in Rectal Cancer. G. E. Binkley, New York.—p. 711.
Carcinoma of Colon (Exclusive of Rectum). W. M. Shedden and R. Dresser, Boston.—p. 715.
Cathode Rays for Radiation Therapy. J. G. Trump, R. J. Van de Graaff and R. W. Cloud, Cambridge, Mass.—p. 728.
Comparative Roentgen Ray Diffraction Study of Several Natural Apatites and Apatite-like Constituent of Bone and Tooth Substance. W. F. Bale, Rochester, N. Y.—p. 735.

Radiation Reaction in Lung.—Warren and Spencer reviewed 398 cases of tumors situated between the diaphragm and the neck in the Huntington, Deaconess and Pondville hospitals for evidence of irradiation pneumonitis. Necropsy was performed in all; 234 had received some irradiation over the thorax and 163 had not. The amount of irradiation varied from 800 to 15,000 roentgens; a few cases of breast cancer had implantation of radium needles only. The points used to differentiate irradiation reaction from other inflammatory changes in lungs were: (1) a hyaline membrane closely adherent to the alveolar walls and always associated with one or all of the following changes, (2) swollen alveolar lining cells either with or without desquamation and fibrosis, edema or mild inflammatory exudation in the supporting tissue, (3) edema without appreciable inflammatory reaction, (4) diffuse alveolar fibrosis without evidence of organizing pneumonia, tuberculosis or silicosis, (5) an unusual fibrillar hyalinization of the alveolar walls, (6) hyalinization of the arterial walls and (7) interalveolar capillary changes; swelling of endothelium and thrombosis. The interval from irradiation to death in large part determined the type of reaction, explaining the absence of reaction in some patients who had received large amounts of radiation. The frequency of pulmonic change increased as did the amount of radiation but not with any regularity. The majority of the cases showing irradiation reaction had an unproductive hacking cough during the height of the local cutaneous reactions. The tissue changes following irradiation of the lungs varied with the amount and kind of radiation. It is probable that the earliest effect is one of mild injury to the alveolar lining cells and the capillary endothelium. Edema, swelling, necrosis and proliferation of the endothelium and alveolar epithelium follow. With injury to connective tissue, fibroblastic proliferation, chiefly in the alveolar walls, occurs. Peribronchial, septal or pleural fibrosis has not been specifically identified with irradiation pneumonitis. Appreciable injury and repair of fibrous tissue occurred only after intensive irradiation. It is not possible to distinguish early acute irradiation pneumonitis from other conditions, although prominent edema and large epithelial and endothelial cells in the absence of much exudate are suggestive. When the primary injury is sufficiently severe to affect the endothelium, fibrous tissue and epithelium, the well developed repair process resembles that following injurious agents. Fibrous thickening and hyaline swelling of veins and arteries associated with irradiation pneumonitis are seen occasionally in youth and more commonly with advancing age, frequently unaccompanied by other disease processes. These changes may be restricted to that portion of the lung which presents other evidence of irradiation pneumonitis and which is known to have been included in the field of irradiation. The only microscopic sign that can with certainty be recognized as irradiation pneumonitis is that which shows some degree of both the early and late stages in the same lung. The hyaline membrane probably represents an acute or subacute response and is diagnostic of irradiation pneumonitis. The other changes are less distinctive and not as easily differentiated from infectious processes.

Am. J. Syphilis, Gonorrhea and Ven. Dis., St. Louis

24:265-400 (May) 1940

Untoward Reactions of Tryparsamide. I. Kopp and H. C. Solomon, Boston.—p. 265.
Statistical Studies of Serologic Surveys. R. Ledgerwood, Springfield, Ill.—p. 284.
Hemolyzed Beef Blood or Sheep Blood Mediums for Isolation of Gonococcus. A. Cohn and Ruth G. Kruger, New York.—p. 295.
Liver Damage After Recovery from Postarsphenamine Jaundice: Follow-Up Study. T. J. Rankin, Cincinnati, and F. W. Marlow Jr., Boston.—p. 301.
Supposed Daily Variation of Reagin Content of Syphilitic Serum. C. F. Mohr and C. A. Smith, Baltimore.—p. 322.
Acute Necrosis of Liver in Infants Following Sodium Bismuth Thioglycollate Administration. I. J. Wolman, Philadelphia.—p. 330.
Sulfanilyl Sulfanilamide (Disulon) in Treatment of Gonococcic Urethritis and Its Complications. H. W. Berg, Albany, N. Y.—p. 337.
*Use of Disulfanilamides in Gonorrhea. S. A. Vest and D. S. Parker Jr., Baltimore.—p. 344.
Classification of Rectal Strictures Due to Lymphogranuloma Venereum. T. R. Peyton, Philadelphia.—p. 360.
Joseph Grünpeck's Libellus de Mentulagra Alias Morbo Gallico of 1503. E. L. Zimmermann, Baltimore.—p. 364.

Disulfanilamides for Gonorrhea.—Vest and Parker compared the effect of sulfanilyl sulfanilamide and the sodium salt of its derivative sulfanilyl dimethyl-sulfanilamide in sixty cases of gonorrheal urethritis. Patients were treated solely with these drugs without local irrigations. Sulfanilyl sulfanilamide in the dosage (1.6 Gm. daily) used has shown considerable antigon-

orrheal activity. Larger doses would probably give superior results, although the possibility of peripheral neuritis might be enhanced. The dimethyl derivative, uliron, has shown but little antigonorrheal activity in the dosage (3 Gm. daily) and regimen in which it was administered. There were few disagreeable toxic symptoms after uliron; paralysis of the thumb developed in one patient, while another had a severe cutaneous rash. Unpleasant symptoms, principally nausea, diarrhea and severe muscular pains (occurring less often than with sulfanilamide) occurred a number of times with sulfanilyl sulfanilamide. The muscular pains may have been prodromal of neuritis. Sulfanilyl sulfanilamide has been valuable in sulfanilamide-resistant cases and in selected cases of gonorrheal urethritis. Sulfanilyl dimethyl-sulfanilamide was inferior to either sulfanilyl sulfanilamide or sulfanilamide in the treatment of gonorrhea in the dosage scheme used by the authors. It does not exert a profound influence on the course of the disease, is not without dangerous toxic potentialities and is accompanied by a high incidence of gonorrheal complications.

Annals of Internal Medicine, Lancaster, Pa.

13:2025-2204 (May) 1940

Effect of Specific Agents Extracted from Soil Micro-Organisms on Experimental Bacterial Infections. R. J. Dubos, New York.—p. 2025.
*Comparative Effectiveness and Toxicity of Sulfathiazole and Sulfapyridine in Pneumococcic Pneumonia. H. F. Flippin, L. Schwartz and S. B. Rose, Philadelphia.—p. 2038.
Studies in Mucous Membrane Hypersensitiveness: IV. Allergic Reaction in Passively Sensitized Mucous Membranes of Ileum and Colon in Humans. I. Gray, M. Harten and M. Walzer, Brooklyn.—p. 2050.
Visceraspinal Syndrome: New Concept of Visceromotor and Sensory Changes in Relation to Deranged Spinal Structures. N. T. Ussher, Santa Barbara, Calif.—p. 2057.
Calcareous Aortic Stenosis: Report of Nine Cases with Autopsy Findings. L. Cohen, I. Gray, P. I. Nash and H. Fink, Brooklyn.—p. 2091.
Determination of Biliary Tract Infection with Encapsulated Duodenal Tube. J. R. Twiss, R. F. Carter and R. Hotz, New York.—p. 2104.
*Hormone Therapy for Treatment of Hirsuties: Preliminary Report. G. B. Dorff, Brooklyn.—p. 2112.
Pseudomegacolon. A. Oppenheimer, Beirut, Lebanon, Syria.—p. 2128.
Popularity of Ewald-Boas Test Meal; Reasons for Its Survival. D. Sandroni and Z. Sagal, New York.—p. 2134.
Some Observations on Persistence of Bachman Skin Test and of Eosinophilia After Recovery from Trichinosis. M. Warren, E. H. Drake and R. S. Hawkes, Portland, Maine.—p. 2141.
Use of Histamine in Rheumatoid Arthritis. R. O. Muether, St. Louis.—p. 2147.
Subacute Bacterial Endocarditis in Older People. T. B. Bayles and W. H. Lewis Jr., New York.—p. 2154.
*Simmonds' Disease (Pituitary Cachexia): Report of Case. J. E. Farber, Buffalo.—p. 2171.

Sulfathiazole and Sulfapyridine in Pneumonia.—Flippin and his associates studied the first hundred pneumonia patients treated with sulfathiazole and an equal number treated with sulfapyridine for a comparison of the effectiveness and toxicity of the two drugs. Of the 200 patients, nineteen (ten sulfathiazole, nine sulfapyridine) received specific antipneumococcus serum in addition to chemotherapy. Serum was given when sulfathiazole or sulfapyridine had apparently failed to bring about the expected clinical response within thirty-six to forty-eight hours. Twelve treated with sulfathiazole and fifteen treated with sulfapyridine died. Five patients moribund on admission were treated with sulfathiazole and four with sulfapyridine. If these cases are excluded the corrected mortality becomes 7.4 and 11.4 per cent respectively for the sulfathiazole and sulfapyridine treated groups. Thirteen patients with bacteremia were treated with sulfathiazole and four of these died. Three of these died within twenty-four hours. Six of the eleven bacteremic patients in the sulfapyridine treated group died. Three of these patients also died within twenty-four hours. In both groups the unusually high incidence of type III infection has probably raised the mortality. Of ten type III deaths, four were twenty-four hour deaths. Therefore the corrected mortality values are less affected by the high incidence of this type of infection. A greater number of patients treated with sulfathiazole received treatment during the first three days of the disease but this did not have a decided influence on the comparative mortality rates of the two groups. Of the twelve fatal cases treated with sulfathiazole, seven were treated after the third day of the disease and four of the deaths occurred within twenty-four hours after admission. In the sulfapyridine treated group eight of the fifteen deaths occurred in patients treated after the third day of the disease and five of these died in less than twenty-four hours after admission. Sulfapyridine brought the temperature down somewhat more rapidly than sulfathiazole, although the average number of hospital days (13.2) for the two groups was the same. Complications were approximately the same in the two groups of patients. Nausea and vomiting were much less marked in frequency and severity in the sulfathiazole group, as were other toxic manifestations. The value of combined drug and serum therapy is questionable at present, but until sufficient data are presented to prove it definitely less effective than chemotherapy alone the authors believe in the combined use of serum and drug in selected cases. It is their impression that the administration of serum was a deciding factor in the recovery of several patients.

Endocrine Therapy for Hirsuties.—Dorff used theelin by inunction in eight cases of female hirsuties and by hypodermic administration in others. The gonadotropic factor of the anterior pituitary gland was used in some in an attempt to stimulate the ovary directly. The eight patients, from 15 to 23 years of age, presented no definite neoplastic pathologic changes in the adrenal, ovary or pituitary glands on clinical examination. All the patients showed some signs of masculinization; hirsuties of the face, trunk and extremities, heterologous formation of suprapubic hair, some exaggeration of the size of the clitoris and irregular or scanty menstrual periods of five patients. Although endocrine therapy did not completely eradicate the hirsuties, it provoked enough important changes to lead one to believe that it might be a stepping stone toward improved therapy; for after treatment had been administered for a time some of the superfluous hairs on the cheeks, chin, parts of the thighs and legs fell out spontaneously. In addition the superfluous hair which had not fallen out became loosened at its roots. In several of the patients there was a familial tendency to superfluous hair growth. However, in spite of this apparent hereditary factor the response to endocrine treatment was the same as in patients with no such tendency. The good effects on hirsuties were comparatively short lived. Within a period ranging from several weeks to several months regrowth began. However, with this regrowth the new hair no longer appeared in its original stubborn or coarse state but was of a lighter color and finer texture and it appeared in a more loosely rooted state so that it could be plucked with ease. While all these changes were taking place in the hirsute areas the normal hair did not fall out nor did it ever loosen. In addition to changes in the hirsutism the menstrual irregularity tended toward correction in some of the patients. The general psychic outlook of most of the patients was greatly improved and a certain feminizing effect was reflected in the facial appearance and demeanor of most of them after treatments had been in progress for a time. Oral administration of a placental extract, emmenin, was given in two cases in addition to local and hypodermic estrogen therapy. With this addition in one case, even though previous theelin therapy provoked no beneficial change, some of the facial hair loosened and fell out. In the other case a falling out and loosening of the hair occurred so that it could be plucked easily, eliminating the necessity of shaving.

Simmonds' Disease.—Farber observed a patient with a clinical diagnosis of pituitary cachexia for two years. The diagnosis was subsequently verified at postmortem examination. The significant clinical symptoms and signs were cachexia, blindness, loss of axillary and pubic hair, atrophy of the breasts and genitalia, amenorrhea, asthenia, anorexia and constipation, integumental changes, hypotension, hypothermia, oligodipsia, oliguria, mental changes and pathologic sleep. Laboratory studies showed a lowered basal metabolic rate, lowered or depressed specific dynamic action of proteins, hypoglycemia, decreased dextrose tolerance, hypocholesterolemia, hypochloremia and hypochloruria, anemia and relative lymphocytosis, and disturbed water and salt balance. It was felt that the mental changes, pathologic sleep, hypothermia, disturbances in water and salt balance and the blindness were probably due to injury by the expanding tumor into surrounding structures, especially

the optic nerves and hypothalamus. Replacement therapy and exploratory craniotomy were unsuccessful. At autopsy a pituitary stalk tumor (cystic epithelioma) was found. There was a generalized microsplanchnia.

Archives of Ophthalmology, Chicago

23:1131-1392 (June) 1940

Ocular Manifestations in Hydroa Vacciniforme. W. H. Stokes, Omaha.—p. 1131.
Measurement of Structures of Fundus: Presentation of Improved Technic. J. M. Cotton and S. Rosin, New York.—p. 1146.
Retroretinal Tissue from Choroid in Kuhnt-Junius Degeneration of Macula: Anatomic Study. E. V. L. Brown, Chicago.—p. 1157.
Paradoxical Monocular Ptosis. T. R. Yanes, Habana, Cuba.—p. 1169.
Subconjunctival Lagrange Sclerectomy ab Externo. R. J. Curdy, Kansas City, Mo.—p. 1173.
Comments on Teaching of Refraction. B. Friedman, New York.—p. 1175.
Shortening of Eyeball for Retinal Detachment. W. E. Borley, San Francisco.—p. 1181.
Congenital Retinal Fold. F. H. Theodore and J. Ziporkes, New York.—p. 1188.
Glaucoma Following Irradiation: Pathologic Report. L. Bothman, Chicago.—p. 1198.
Melanosarcoma of Choroid: Report of Case with Unusual Features. E. N. Beery, Brooklyn.—p. 1213.
Further Evidence of Change in Position of Eyeball During Fixation. G. E. Park, Chicago, and R. S. Park, Richmond, Ky.—p. 1216.
Hypertrophy of Thymus in Vernal Conjunctivitis. G. Alamilla, Habana, Cuba.—p. 1231.
Effects of Sulfanilamide and Sulfapyridine on Koch-Weeks Bacillus (Haemophilus Influenzae). J. S. Guyton, Baltimore.—p. 1243.
Gyrate Atrophy of Retina and Choroid Following Retinitis Pigmentosa: Report of Two Cases. W. T. Davis and E. Sheppard, Washington, D. C.—p. 1252.
Retinitis Pigmentosa: Etiologic and Clinical Implications Based on Twenty-One Cases. R. C. Moehlig and R. H. Pino, Detroit.—p. 1257.
Tonic Deviations of Eyes Produced by Movements of Head, with Special Reference to Otolith Reflexes: Clinical Observations. F. R. Ford and F. B. Walsh, Baltimore.—p. 1274.
Choroideremia. B. Friedman, New York.—p. 1285.
Pulsating Exophthalmos. H. S. Sugar and S. J. Meyer, Chicago.—p. 1288.

Archives of Otolaryngology, Chicago

31:711-884 (May) 1940

Endaural Fenestration of External Semicircular Canal for Restoration of Hearing in Cases of Otosclerosis: Summary Report of 120 Cases. J. Lempert, New York.—p. 711.
*Diagnosis and Treatment of Carcinoma of Lung, with Statistical Review of Forty Cases. A. E. Hammond, Detroit.—p. 780.
Sulfanilamide in Treatment of Acute Infection of Ear and of Mastoid in Infants and in Children: Quantitative Study of Seventeen Cases. H. M. Hebble, Philadelphia.—p. 808.
Significance of Aphasia as Symptom of Otogenic Extradural Abscess. F. Altmann, New York.—p. 819.
Plastic Operations for Hump Nose: Notes on Artistic Anatomy. A. M. Brown, Chicago.—p. 827.
Osteoma of the Mastoid: Report of Case with Investigation of Constitutional Background. E. A. Stuart, Montreal.—p. 838.

Carcinoma of Lung.—Hammond presents a detailed study of forty cases of carcinoma of the lung. The ratio of men to women was 4:1. The higher rate in men is explained on the basis of the excessive use of tobacco, the tar from the combustion acting as a carcinogenic element. Other irritative elements, chemical, mechanical, bacterial, thermal and radioactive agents, may also contribute. The highest age incidence (72.5 per cent) was between 40 and 60 years. The most important clinical symptoms were cough, pain, loss of weight, hemoptysis, dyspnea and hoarseness. Cough occurred in 100 per cent and hoarseness in 10 per cent; the remaining symptoms occupied positions between the two. Bronchoscopic study was the sole and indisputable diagnostic procedure in nearly all cases. Physical signs and x-ray studies were of little value. The malignant grade of the carcinoma was of little value in estimating the final outcome in the individual case. None of the six patients operated on survived for as long as nine months. Of the twenty-six patients treated by irradiation, four apparently have been cured and for the others some prolongation of life with more or less satisfactory palliation was obtained. The patients apparently cured were in the early stage, and the good results were obtained by the combination of roentgen irradiation administered externally and radium intrabronchially. The treatment of this dreaded disease constitutes a problem whose solution is still in the future.

Archives of Physical Therapy, Chicago

21:257-320 (May) 1940

Comparison of Treatment of Severe Asthma by Electrophoresis of Epinephrine with Other Methods. H. A. Abramson, New York.—p. 261.
Evaluation of Some Methods of Treatment in Peripheral Vascular Disease. W. Bierman, New York.—p. 267.
*Management of Facial Paralysis by Physical Measures. M. K. Newman, J. M. Berris and S. S. Bohn, Detroit.—p. 270.
*Modified Rapid Sinusoidal Current for Trigeminal Neuralgia: Supplementary Report of 100 Additional Cases. B. Ulanski, Philadelphia.—p. 275.
Postural Reflexes. O. L. Huddleston, Denver.—p. 282.
Individual Play Exercises for Handicapped Children. Bertha Weinmann, Chicago.—p. 289.
Further Studies in Electrosurgical Management of Retinal Separation. O. B. Nugent, Chicago.—p. 297.
Advantages of Institutional Care and Physical Therapy in Chronic Arthritis. J. F. Wyman, Milwaukee.—p. 301.

Management of Facial Paralysis by Physical Measures.—Newman and his co-workers state that the treatment of facial paralysis is dependent on its various etiologic factors, on the question of whether the paralysis is of central or peripheral origin, and on the site of the lesion. They managed thirty cases by the use of physical therapeutic measures. The ages of the patients ranged between 6 and 79 years, average 37. With the onset of an acute refrigerans type of facial paralysis iodides in saturated solution of potassium or syrup of hydriotic acid are indicated for their general alterative action. Analgesics are valuable. Saline laxatives are used during the acute stage of inflammation for their possible detergent effect. The physical measures applicable during the acute phase of the refrigerant palsies are directed toward the reduction of the inflammatory exudate and toward keeping the denervated muscles in position of physiologic rest. Decongestion at the stylomastoid foramen can be accomplished by cantharides plasters, hot moist applications, radiant heat, negative galvanism and conventional or short wave diathermy. The frequency of application is indicated by the pain and the tolerance of the tissues. To prevent muscles from stretching they are supported by attaching two Y bands of adhesive tape at the zygomatic bone and temporal region. Positive galvanism is especially efficacious for the relief of pain. With the subsidence of the acute symptoms within eight to ten days, testing for reaction of degeneration is instituted. When no reaction of degeneration is present, recovery can be expected in from two to eight weeks. If a sufficient amount of recovery is not obtained after six months of rigorous physical therapeutic measures, surgery is to be considered. Active treatment now consists of heat, massage, voluntary exercise and electrical stimulation (with interrupted galvanic, sinusoidal and faradic currents). Diathermy or radiant heat is applied to the paralyzed side of the face for from fifteen to thirty minutes. Another method of promoting a circulatory response consists of the common ion transfer 0.5 per cent acetylbetamethylcholine hydrochloride. From 15 to 20 milliamperes of the galvanic current for twenty minutes is adequate. Negative galvanism for its heating effect can be applied for thirty minutes over the stylomastoid foramen. The strength of current should be just less than the amount required to cause a contraction of the muscles on the unaffected side. On the first day three contractions over the motor points are sufficient, and on subsequent days the number of contractions is increased but always kept within the fatigue range of the muscle. After one or two weeks the slow sine wave is substituted, from twenty to thirty contractions per minute being used. When the faradic current can be tolerated, it should replace the sine wave current. Gentle stroking massage which follows stimulation preserves muscular tone. Exercise of the facial muscles is carried out in front of a mirror every day. The etiologic agent must always be removed before physical measures are instituted. Seventeen of the thirty cases followed exposure, six middle ear disease, one dental manipulation, one trauma associated with an automobile accident, two head colds, one mumps, one an operation on the eighth nerve for vertigo, one a postpartum infection and two mastoidectomy. In the seventeen cases of exposure paralysis, a partial reaction of degeneration or no reaction of degeneration was present after ten days. Eight of these patients

received only heat, massage and exercise, while the remainder received electrical stimulation as well.

Sinusoidal Current for Trigeminal Neuralgia.—Ulanski reports 100 additional cases which supplement sixty-five cases of trigeminal neuralgia reported in 1937 and treated by a modified rapid sinusoidal current. In the last seventy-five cases the current used was further changed to one of 43,200 alternations per minute. This modification has produced a smoother current, has added to the beneficial results obtained and has lessened the amount of discomfort to the patient while under treatment. Of the last 100 patients immediate relief was obtained by 85 per cent; 50 per cent of these patients have been free from pain for from one to six years. Two had recurrence of symptoms but additional treatment again relieved them. The advantages of the modified sinusoidal treatment of trigeminal neuralgia are that typical and atypical cases can be treated at the office or the patient's home, there are no after-effects (sensory or motor disturbances), the method can be used regardless of any other previous treatment, there are no contraindications and all divisions of the nerve can be treated.

Archives of Surgery, Chicago

40:1039-1218 (June) 1940

General Principles of Preoperative and Postoperative Treatment. A. Blalock, Nashville, Tenn.—p. 1039.
Preanesthetic Medication. B. H. Robbins, Nashville, Tenn.—p. 1044.
Preoperative and Postoperative Treatment of Patient with Diabetes. L. S. McKittrick and H. F. Root, Boston.—p. 1057.
Preoperative and Postoperative Care of Patients with Lesions of Stomach and Duodenum. W. Walters and H. R. Hartman, Rochester, Minn. —p. 1063.
Preoperative and Postoperative Treatment of Patients with Lesions of Small Intestine and Colon. J. R. Paine, Minneapolis.—p. 1083.
Effect of Diet on Composition of Liver in Presence of Obstruction of Common Bile Duct. J. Johnson, I. S. Ravdin, H. M. Vars and H. A. Zintel, Philadelphia.—p. 1104.
Preoperative and Postoperative Care in Anorectal Surgery. L. A. Buie, Rochester, Minn.—p. 1116.
Preoperative and Postoperative Treatment of Toxic Goiter. N. A. Womack, St. Louis.—p. 1123.
Preoperative and Postoperative Care of Patients with Surgical Diseases of Chest. J. Alexander, Ann Arbor, Mich.—p. 1133.
Preoperative and Postoperative Care of Patients with Lesions of Heart and Pericardium. C. S. Beck, Cleveland.—p. 1151.
Preoperative and Postoperative Management in Gynecology. G. H. Gardner, Chicago.—p. 1164.
Preoperative and Postoperative Care in Neurosurgical Procedures. C. Pilcher, Nashville, Tenn.—p. 1176.
Preoperative and Postoperative Treatment in Urology. C. Huggins and C. Vermeulen, Chicago.—p. 1185.
Preoperative and Postoperative Care in Reconstructive Surgery. J. B. Brown, L. T. Byars and F. McDowell, St. Louis.—p. 1192.

Canadian Medical Association Journal, Montreal

42:413-520 (May) 1940

Mammary Tumors Produced in Rats by Action of Estrone Tablets. R. L. Noble, C. S. McEuen and J. B. Collip, Montreal.—p. 413.
Blood Group Classifications (Plea for Uniformity). I. H. Erb, Toronto. —p. 418.
Compression Fractures of Os Calcis. G. Murray, Toronto.—p. 422.
Renal Tuberculosis. H. D. Morse, Winnipeg, Man., and D. L. Scott, Ninette, Man.—p. 424.
Epithelioma of Limbus. E. P. Grenier, Montreal.—p. 428.
Pollen Survey in Manitoba. C. H. A. Walton and Margaret G. Dudley, Winnipeg, Man.—p. 430.
Cyclopropane—Unmixed. B. C. Leech, Regina, Sask., and H. R. Griffith, Montreal.—p. 434.
Treatment of Diabetes in Children. Gladys Boyd, Toronto.—p. 438.
Treatment of Placenta Praevia. W. A. Scott, Toronto.—p. 442.
Treatment of Puerperal Sepsis. L. T. Armstrong, Toronto.—p. 445.
Intussusception. D. S. Macnab, Calgary, Alta.—p. 447.
How To Be Wrong: The X-Ray, a Quick and Easy Method. H. W. Schwartz, Halifax, N. S.—p. 450.
Treatment of Nasal Sinus Infection by Ultra Short Wave Diathermy. W. P. E. Paterson, Ottawa, Ont.—p. 454.
Some Fundamental Principles in Treatment of Skin Disorders. G. B. Sexton, London, Ont.—p. 457.
Recurrent Pneumococcic Meningitis Complicating Skull Fracture. A. R. Elvidge and E. Roseman, Montreal.—p. 460.

Florida Medical Association Journal, Jacksonville

26:529-580 (May) 1940

Appendicitis. L. M. Gable, St. Petersburg.—p. 545.
Multiple Blood Transfusions in Acute Leukopenia of Adult Lobar Pneumonia. E. Evans and B. F. Hart, Winter Park.—p. 551.
The Cross-Eyed Child. N. S. Rubin, Pensacola.—p. 555.

Georgia Medical Association Journal, Atlanta

29:251-294 (May) 1940

Medicine: Yesterday and Tomorrow. W. H. Myers, Savannah.—p. 251.
Postoperative Care. J. G. McDaniel, Atlanta.—p. 255.
*Chronic Brucellosis: Report of Two Cases in Children Diagnosed by Intracutaneous Tests. Helen W. Bellhouse, Thomasville.—p. 260.
Recent Advances in Treatment of Mental Disorders. J. N. Brawner and A. F. Brawner, Smyrna.—p. 264.
Etiologic Factors of Sterility in the Male: Report of Case. C. Rieser, Atlanta.—p. 269.
Founding of the Southern Medical College: Events Preceding Its Organization. G. Murphy, Atlanta.—p. 273.
Gonococcemia: Patient Unsuccessfully Treated with Sulfanilamide. J. F. Schneider and J. C. Massee, Atlanta.—p. 276.

Chronic Brucellosis.—Bellhouse points out that symptoms of chronic undulant fever are varied and kaleidoscopic and range from the acute, febrile illness of twelve days, which in a child could be called almost anything, through more protracted acute illness with typical remissions, to the protracted mild illness with symptoms of occasional elevation of temperature and fairly consistent anorexia, increased irritability and nervousness, occasional sweating and vague joint pains. Undulant fever is poorly recognized in infants in countries in which it is endemic, and this is even more likely to occur with abortus infections, which produce, as a rule, milder more chronic illnesses in which the physician is less likely to avail himself of the proper laboratory procedures. This is particularly true in infants and small children. In addition to the cutaneous tests, agglutination tests and routine blood cultures should be done. Children might be more susceptible to brucella infection than is generally suspected and the disease might fail to be recognized because it occurs in a mild, obscure form without development of agglutinins. The biologic immaturity of the tissues of the younger child may explain the difference in the immune reactions. Two cases in children are reported whose clinical histories together with positive cutaneous tests enabled the author to make a definite diagnosis of chronic brucellosis, probably of three years' duration. The strongly positive cutaneous reactions became minimal in two and one half months, during which time the children had no common change of regimen except that they had been given pasteurized instead of raw milk. Agglutination tests, as is frequently the case in children, had proved of no value in diagnosis. A positive intracutaneous test alone is not sufficient. It merely signifies exposure and sensitization and should be correlated with the clinical history and other accepted tests. Cattle should be tested in a routine manner for all types of Brucella.

Iowa State Medical Society Journal, Des Moines

30:229-272 (June) 1940

Medicine and Public Relations. F. A. Hennessy, Calmar.—p. 229.
Some Methods of Stimulating Medical Progress in Iowa. F. P. McNamara, Dubuque.—p. 233.
Present Status of Knowledge of Whooping Cough. E. N. Hesbacher, Des Moines.—p. 236.
Intravenous Anesthesia and Its Uses. F. J. Piekenbrock and P. F. Olson, Dubuque.—p. 240.
Plasma Proteins in Surgery. E. S. Korfmacher, Grinnell.—p. 242.

Journal of Allergy, St. Louis

11:333-438 (May) 1940

Inquiry into Reagins in Convalescent Serum Indicating Its Inhibiting Effect. I. H. Tumpeer and E. Rubens, Chicago.—p. 333.
Subcutaneous Tissue Pressure Studies in Urticaria and Angioneurotic Edema. W. T. Vaughan and D. M. Pipes, Richmond, Va.—p. 349.
Summer Hay Fever of Unknown Origin in the Southeast. C. K. Weil, Montgomery, Ala.—p. 361.
*May Fly (Ephemerida) Hypersensitivity. K. D. Figley, Toledo, Ohio. —p. 376.
*Use of Potassium Chloride in Treatment of Allergic Conditions. W. C. Spain, F. H. Westcott and G. E. Gaillard, New York.—p. 388.

May Fly (Ephemerida) Hypersensitivity.—Figley states that May fly hypersensitivity is quite common among allergically susceptible individuals exposed to these insects by reason of their residence near the Great Lakes or other large fresh water bodies. Persons with symptoms of seasonal hay fever and asthma should always be tested for May fly sensitization. Among 1,281 patients with seasonal hay fever and pollinosis who were adequately tested the author found that ninety-five (7.4 per cent) reacted to May fly. Of these, twenty reacted to May fly alone and twenty to May fly and some other inhalant, usually ragweed pollen. That the other fifty-five

patients were specifically sensitive is shown by the fact that many of them were tested by passive transfer or by inhalation of powdered May fly and all reacted positively. These fifty-five patients had all been exposed more than once to May fly contact and had developed specific hypersensitivity. They were not treated with May fly because they lived inland and could avoid exposure. The first forty patients were all treated with extracts of May fly or of May fly and ragweed pollen, with satisfactory results.

Potassium Chloride for Allergic Conditions.—According to Spain and his associates, the effect of potassium chloride medication on allergic conditions was disappointing. Of fifteen patients with hay fever who received potassium chloride alone, twelve obtained no relief. Not only was the date of onset not delayed but the severity of symptoms persisted unabated. Of the remaining three patients one was better than during the previous season with phylactic injection therapy, one was better than during the previous season when no treatment was given and the result in the third is not reliable, for he reported "weakness" for forty-eight hours following a number of the saline injections and discontinued both the potassium chloride medications and the pollen injections. Of sixteen patients to whom phylactic and incomplete preseasonal pollen injections, as well as potassium chloride, were given, five continued to have hay fever throughout the season; four reported immediate definite relief (with a few severe days throughout the season) and five reported considerable relief with only moderate hay fever through the remaining part of the season. Of fifty control patients who received a complete series of standard pollen injections, twelve had five or more days of severe hay fever, nineteen had fewer than five severe days and the remaining nineteen had no severe days. Of twelve patients with allergic coryza, only three reported any definite relief of symptoms with the addition of potassium chloride to their routine treatment. These three also noted periods of exacerbation of symptoms when taking potassium chloride.

Journal of Immunology, Baltimore

38:333-412 (May) 1940

Anaphylaxis in Rabbit: The Symptom of Fall of Blood Pressure. M. Rocha e Silva, São Paulo, Brazil.—p. 333.
Effect of Age on Spread of Dye in Skin of Normal, Antigenically Stimulated and Tuberculous Guinea Pigs. R. Y. Gottschall and W. E. Bunney, Lansing, Mich.—p. 345.
Serum Cholesterol in Horses During Immunization with Pneumococci, Including a Note on Hypercholesterolemia of Infectious Anemia. S. Member, M. Bruger and M. R. Chassin, New York.—p. 355.
Improved Serologic Method for Determination of Precipitative Titers of Antiserums. P. R. Cannon and C. E. Marshall, Chicago.—p. 365.
Sulfanilamide in Experimental Infections with Streptococci from Scarlet Fever and Erysipelas. Helen Cook Newman, Chicago.—p. 377.
*Bactericidal Power of Blood from Patients and Normal Controls for Staphylococci. W. W. Spink and J. R. Paine, with assistance of Jean Jermsta, Minneapolis.—p. 383.
Practical Assay of Type III Antipneumococcus Rabbit Serum by Mouse-Protective Test. A. Holm and G. F. Leonard, New Brunswick, N. J.—p. 399.
Blood Groups and MN Types of Eskimos: II. (District of Julianehaab, West Greenland). V. Fabricius-Hansen, Copenhagen, Denmark.—p. 405.

Bactericidal Power of Blood for Staphylococci.—Spink and Paine studied the antibacterial immunity of twenty-five patients with various types of staphylococcic lesions. Bactericidal tests were done on the bloods of these patients at various intervals during the course of their illnesses and after they had recovered. The bloods of eighteen individuals free from any known infection were used as normal controls. Thirty-one strains of staphylococci were utilized in performing the bactericidal tests. Seventeen of these strains were isolated from the patients' lesions. A bacteremia was demonstrated in six of the twenty-five. Three individuals died as a result of their infections. The most common type of lesion was osteomyelitis. All but one of the strains produced a pigment and therefore were classified with the Staphylococcus aureus group. Coagulase production was demonstrated for all but two strains, and also all but two fermented mannitol. All the strains possessed hemolysin for rabbit erythrocytes. According to their activity on crystal violet agar, all except one strain gave positive results. With the exception of a few patients, little bactericidal power resided in the blood for homologous strains. This is more apparent for the bloods of the normal controls. On the whole, no definite correlation could be shown to exist between the bactericidal power of the patients' bloods and their clinical course. However, in some instances the bloods of patients killed an appreciable number of homologous organisms. In comparison with the foregoing, the bloods of both the patients and the normal controls were capable of killing heterologous organisms more consistently. The information reemphasizes the lack of an appreciable degree of killing power by human blood for pathogenic staphylococci, even though small numbers of organisms were killed in some instances. The more consistent bactericidal power of blood for the heterologous strains of staphylococci than for the homologous organisms can be partly explained on the basis that some of the heterologous strains were nonpathogenic according to one or more of the biologic tests that were employed. Organisms that did not ferment mannitol or coagulate human plasma were usually killed in large numbers. Nonpathogenic strains of staphylococci were killed by the whole blood, whereas pathogenic strains resisted the bactericidal action.

Journal of Lab. and Clinical Medicine, St. Louis

25:779-896 (May) 1940. **Partial Index**

Meteorotropism of Eclampsia. P. G. Fuerstner, San Francisco, and F. Sargent, Cambridge, Mass.—p. 779.
*Studies in Cellular Exudates of Bowel Discharges: I. Control Observations in 1,123 Patients, Seven Autopsies and Three Dog Experiments. Z. Bercovitz, New York.—p. 788.
Electrocardiographic Changes Induced by Exercise in Diagnosis of Coronary Insufficiency. L. H. Sigler, Brooklyn.—p. 796.
*Hypertension and Obesity: Statistical and Clinical Study of 10,883 Individuals. S. C. Robinson, M. Brucer and J. Mass, Chicago.—p. 807.
One Hundred and Forty-Five Drunken Drivers: Blood and Urine Alcohol Study. D. F. Bavis, Lincoln, Neb.—p. 823.
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Effect of Reduced Evaporation on Vitamin Content of Fresh Vegetables in Refrigerated Storage. R. S. Harris, H. B. Wissmann and D. Greenlie, Cambridge, Mass.—p. 838.
Further Study of Vi Antibody Content of Serums of Typhoid Patients and Carriers. Lois Almon and W. D. Stovall, Madison, Wis.—p. 844.
Cachexia Responding to Extract of Anterior Lobe of Pituitary. D. C. Sutton and J. Ashworth, Chicago.—p. 848.
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Cultural Diagnosis of Tuberculosis Using Bordet-Gengou and Löwenstein Mediums. Lucy Mishulow and Sadie Reavin, New York.—p. 876.
The Ide Test for Syphilis. B. R. Powers, Knoxville, Tenn.—p. 883.
Concentration of Tubercle Bacilli from Spinal Fluid by Means of Chemical Flocculation and Lipoid Solvents. J. H. Hanks and H. A. Feldman, Washington, D. C.—p. 886.

Cellular Exudates of Bowel Discharges.—According to Bercovitz, studies on cellular exudates carried out during the last four years have established that, whenever pathologic changes take place in the intestinal mucosa, cells of various types will be found in the discharge. Conversely, when no cells are found no pathologic condition is present. The presence or absence of these cells can be determined by microscopic examination of the discharges. Observations were made on 1,123 patients, who reported their bowel function to be absolutely normal. The specimens examined consisted of the normally passed bowel evacuations and the diarrheal discharge following dosage with magnesium sulfate. Of the 2,158 specimens obtained, 1,960 were normal. Magnesium sulfate was given to 127 patients, who passed 198 watery stools. Only eleven specimens out of the entire total were positive for cells. These specimens were obtained from two patients 57 and 62 years of age. Further study of them has not been possible. The results indicate that cells do not occur in the intestinal discharges of normal individuals even though magnesium is given to produce a diarrheal movement. For comparison the intestinal contents from several different levels in the gastrointestinal tract taken during postmortem examinations of seven individuals, scrapings from the intestinal walls at the same locations and specimens of the intestinal contents from three locations in the colon and

from the terminal ileum from three dogs were examined and found entirely negative for cells. The conclusion is drawn that, if no pathologic condition exists, cells will not be found on microscopic examination of the intestinal discharges.

Hypertension and Obesity.—Robinson and his associates present the result of periodic physical examinations of 10,883 apparently healthy residents of an urban region. The relationship between weight and blood pressure of the individuals was determined. Weight alone was found to be a poor measure of obesity. Instead, a ponderal index—weight divided by height—was used as an index of relative overweight. With an increase in age there was an increase in weight. After the age of 30 this increase in weight is probably a pathologic process. With an increase in ponderal index toward obesity there was a step-like rise in both mean systolic and diastolic blood pressures in men and women. The modal systolic and diastolic pressures increased with an increase toward heavier weight though not as markedly as did the mean. The per cent actual to expected ratio shows that obese men have almost three times more systolic hypertension and almost four and one half times more diastolic hypertension than do underweight men. Obese women have six times more systolic and diastolic hypertension than do underweight women. Obese men have only one half as many low systolic and only five eighths as many low diastolic pressures as do underweight men. The corresponding figures for women are three eighths and one half respectively. In any hypertensive group overweight is proportionately more common than underweight, and, conversely, in any low pressure group underweight is more common than overweight. Among obese men high systolic pressures are two and one half times more common than low pressures, while high diastolic pressures are three times more common than low pressures, and for overweight women high systolic and diastolic pressures are three times higher than low systolic and diastolic pressures. Among underweight men there are two and one half times more low systolic pressures than high systolic pressures and three and one half times more low diastolic pressures than high diastolic pressures. Among underweight women there are almost four times more low systolic and diastolic pressures than high systolic and diastolic pressures. In every age group (except women more than 60 years of age) there is an increase in mean systolic and diastolic pressures with an increase in weight. Among the overweight less than 45 years of age there are more low pressures than high pressures. This decreases with succeeding decades so that at the age of 45 there is a complete reversal and thereafter there are more high than low pressures. In every age group overweight men and women more often have high than low pressures. Low pressures are more frequent than high pressures in the underweight in every age group (except women more than 60 years of age). Likewise hypertensive men and women are more often overweight than underweight, and those with low pressure are more often underweight than overweight. In general, obesity and hypertension are frequently associated, but the significance of this fact must be withheld until the influence of body build on obesity has been appraised.

Journal-Lancet, Minneapolis

60:195-252 (May) 1940

Some Aspects of Mental Hygiene Program in Early Childhood. W. S. Langford, New York.—p. 195.
Etiology and Management of Speech Disorders. B. Bryngelson, Minneapolis.—p. 199.
Specific Reading Disability: Survey. P. Dozier, Philadelphia.—p. 202.
Epilepsy Research and Mining. W. G. Lennox, Boston.—p. 205.
Mental Hygiene as Related to Chronic Illness. B. Crothers, Boston.—p. 208.
The Psychiatric Clinic for Children of the University Hospital. E. K. Clarke, Minneapolis.—p. 211.
Studies of Physical Defects in Delinquents. H. C. Schumacher, Cleveland.—p. 213.
Physiologic Phenomena Which Are Misinterpreted as Nasal Disease. H. L. Williams, Rochester, Minn.—p. 216.
Diagnosis and Treatment of Leukorrhea. E. Allen, Chicago.—p. 221.
Modern Conceptions of Backache. H. W. Meyerding and G. A. Pollock, Rochester, Minn.—p. 225.
Diagnosis and Treatment of Eye, Ear, Nose and Throat Conditions of Particular Interest to the General Practitioner. A. D. McCannel, Minot, N. D.—p. 232.
Quarter of a Century of Health Work in the University of California Health Service. R. T. Legge, Berkeley, Calif.—p. 236.

Journal of Nervous and Mental Disease, New York

91:697-840 (June) 1940

Organization of Psychoanalytic Procedure in the Hospital. D. M. Bullard, Rockville, Md.—p. 697.
Paraphysial Cysts of Third Ventricle. H. Zeitlin and B. W. Lichtenstein, Chicago.—p. 704.
Protracted Shocks Occurring During Insulin Shock Therapy and Their Treatment. F. Kant, Hartford, Conn.—p. 712.
Psychiatric Aspects of Treatment of Cryptorchidism. E. Davidoff, Syracuse, N. Y.—p. 724.
Electro-Encephalocardiogram. D. E. Schneider, with technical collaboration of C. C. Clark, New York.—p. 742.
Intradural Spinal Lipomas: Report of Case, with Remarks on Their Problematic Origin and Unusual Pathologic Characteristics. G. Wilson, H. Bartle Jr. and J. S. Dean, Philadelphia.—p. 745.
On Epilepsy. O. Marburg, New York.—p. 754.

Journal of Nutrition, Philadelphia

19:415-516 (May) 1940

Composition of Some Common Foods with Respect to Carbohydrate Content. T. M. Carpenter, Boston.—p. 415.
Combustion of Carbohydrates in Man After Ingestion of Common Foods. T. M. Carpenter, Boston.—p. 423.
Choline Metabolism: IV. Relation of Age, Weight and Sex of Young Rats to Occurrence of Hemorrhagic Degeneration on Low Choline Diet. W. H. Griffith, St. Louis.—p. 437.
Wheat as a Dietary Source of Iron. A. H. Free, Cleveland, and F. C. Bing, Chicago.—p. 449.
Effects of Simple Dietary Alterations on Retention of Positive and Negative Minerals by Children. Icie G. Macy, Frances Cope Hummel, Helen A. Hunscher, Marion L. Shepherd and Helen J. Souders, with assistance of Mary Bates Olson, Priscilla Bonner, J. Horton, Louise Emerson and A. Theresa Johnston, Detroit.—p. 461.
Further Studies on Effectiveness of Arsenic in Preventing Selenium Poisoning. K. P. DuBois, A. L. Moxon and O. E. Olson, Brookings, S. D.—p. 477.
Nicotinic Acid Potency of Food Materials and Certain Chemical Compounds. H. A. Waisman, O. Mickelsen, J. M. McKibbin and C. A. Elvehjem, Madison, Wis.—p. 483.
Pseudohypophysectomy: Condition Resembling Hypophysectomy Produced by Malnutrition. M. G. Mulinos and L. Pomerantz, New York.—p. 493.
Protein Anabolism in Organs and Tissues of Pregnant Rats at Different Levels of Protein Consumption. L. J. Poo, W. Lew, D. D. Lee and T. Addis, San Francisco.—p. 505.

New England Journal of Medicine, Boston

222:865-900 (May 23) 1940

New England, Neurosurgery and the Neurosurgeon. W. J. Mixter, Boston.—p. 865.
Minor Causalgia: Hyperesthetic Neurovascular Syndrome. J. Homans, Boston.—p. 870.
*Extreme Leukocytosis and Acute Hemolytic Anemia Associated with Administration of Sulfanilamide: Report of Case. H. M. Spence and G. M. Roberts, Dallas, Texas.—p. 874.
Endocrines: Use of Testosterone. J. C. Aub, Boston.—p. 877.

Leukocytosis and Hemolytic Anemia with Sulfanilamide.—Spence and Roberts report a case of acute hemolytic anemia following administration of sulfanilamide and point out that this disorder is one of the most serious complications of this drug. It is characterized by a rapid fall in the erythrocyte count and hemoglobin during the first few days of sulfanilamide administration. The process is apparently a peripheral hemolysis due to an idiosyncrasy to the drug and is unrelated to the dosage, concentration of sulfanilamide in the blood or type of infection. The bone marrow shows evidence of hyperplasia. The acute hemolytic anemia is to be distinguished from the comparatively slight, slowly developing drop in hemoglobin that commonly occurs when sulfanilamide administration is prolonged for ten days or more. Harvey and Janeway first described the acute anemia, reporting three cases. Wood reported twenty-one cases occurring among 522 patients treated with sulfanilamide, an incidence of 4 per cent. That this figure is probably considerably higher than the average is indicated by the comparatively few reports in the literature and by the fact that no case of acute hemolytic anemia, other than the one here reported, has been encountered in more than 2,000 patients who received the drug at the authors' hospital. The extremely high leukocyte count in the reported case, in contradistinction to the granulocytopenia usually considered a hazard of sulfanilamide, prompted the authors to analyze several cases of acute hemolytic anemia reported in the literature. They gained the impression that the leukemoid picture is an exaggeration of the moderate to marked leukocytosis in other cases. They

have no explanation of its mechanism beyond suggesting that it may have been a concomitant of the marked bone marrow stimulation and hyperplasia. The treatment of the acute anemia involves withdrawal of the drug, forcing of fluids and maximum transfusions of blood. The convalescence is rapid after the patient surmounts the hemolytic crisis.

South Carolina Medical Assn. Journal, Greenville

36:135-158 (May) 1940

Influence of Bromides in Mental Diseases. J. T. Cuttino, Columbia.—p. 135.
Official Syrups as Vehicles. J. H. Hoch, Charleston.—p. 139.
Diagnostic Significance of Upper Abdominal Pain. J. W. Ratliffe, Anderson.—p. 141.

Southern Medical Journal, Birmingham, Ala.

33:559-672 (June) 1940

*Carcinoma of Lung: Analysis of 195 Cases, with Special Note on Needle Puncture Biopsy. C. J. Tripoli, New Orleans, and L. F. Holland, Austin, Texas.—p. 559.
Importance of X-Ray Interpretation in Treatment of Pulmonary Suppuration. B. Blades, St. Louis.—p. 565.
Biologic Action of Radiant Energy. E. R. Whitmore, Washington, D. C.—p. 572.
Stones of Recumbency. H. E. Carlson and N. F. Ockerblad, Kansas City, Mo.—p. 582.
The Grading of Rectal Cancer. T. E. Smith, Dallas, Texas.—p. 593.
Electrically Lighted Anoscope with Detachable Handle. J. H. Dodson, Mobile, Ala.—p. 600.
*Measles Complicating Pregnancy: Report of Twenty-Four Cases with Three Instances of Congenital Measles. I. Dyer, Tahlequah, Okla.—p. 601.
Cerebellar Abscess: Review of Cases. H. Wilkins, Oklahoma City.—p. 605.
Etiology of Nerve Deafness, with Particular Reference to Quinine. S. B. Forbes, Tampa, Fla.—p. 613.
Primary Cutaneous Gilchrist's Disease. J. L. Callaway and V. Moseley, Durham, N. C.—p. 622.
Studies in Obstetric Analgesia. D. M. Paton, Houston, Texas.—p. 626.
Serodiagnostic Tests for Syphilis as Performed in State Laboratories in 1938 and 1939: Report of the Committee on Evaluation of Serodiagnostic Tests for Syphilis. H. H. Hazen, T. Parran, J. F. Mahoney, Washington, D. C.; A. H. Sanford, Rochester, Minn.; F. E. Senear, Chicago; W. M. Simpson, Dayton, Ohio, and R. A. Vonderlehr, Washington, D. C.—p. 633.
Analysis of Periodic Physical Examinations for Five Years. J. J. Brandabur, Huntington, W. Va.—p. 638.
Treatment of Typhoid Fever by Thiazole Derivatives of Sulfanilamide: Preliminary Report of Four Cases. J. O. Weilbaecher Jr., Emma S. Moss, H. M. Taylor and H. Dupuy, New Orleans.—p. 645.
Some Medicolegal Aspects of Alcoholic Intoxication. F. C. Helwig, Kansas City, Mo.—p. 648.
Indications for and Results of Splenectomy. H. D. Collins, Oklahoma City.—p. 656.
Roentgenologic Bone Manifestations in Certain Generalized Diseases of Infants and Children. W. D. Anderson and J. G. Hughes, Memphis, Tenn.—p. 660.
Note on Effect of Alpha-Tocopherol (Vitamin E) in Human Nutrition. T. D. Spies, Birmingham, Ala., and R. W. Vilter, Cincinnati.—p. 663.

Carcinoma of Lung.—According to Tripoli and Holland, the advent of lobectomy and pneumectomy has entirely changed the outlook in many cases of carcinoma of the lung, a disease in which until recently the prognosis was hopeless. The question of what these methods can achieve depends entirely on prompt diagnosis. The authors present an analysis of 195 cases of primary carcinoma of the lung. Pulmonary carcinoma now represents 10 per cent of all malignant tumors, improved diagnostic methods having resulted in a marked increase in the frequency of recognition. The incidence in white patients is more than double that in the Negro, and the male incidence is seven times higher than the female. The largest number of cases occurs in the sixth decade of life. The etiology is unknown. The classification into reserve cell, columnar cell and squamous cell carcinoma is believed to be most reasonable. Chest pain, cough, hemoptysis, loss of weight, dyspnea, persistent expectoration and fever are the chief symptoms in the order of frequency. There are no notable physical signs, although atelectasis and pleural effusion are often present. Most physical signs are the result of the malignant process and not signs of the disease per se. Roentgenologic examination, bronchoscopy, bronchography and thoracoscopy are all useful diagnostic methods, though the latter has only a limited field. For the last year the authors have employed punch biopsy of superficially located tumors as a diagnostic method and have repeatedly demonstrated its efficacy. They use a needle which operates on the principle of a trocar. It consists of a short hollow outer needle with a beveled edge containing a smaller-bore hollow needle. The inner needle is longer than the outer needle and is divided in the center. The cutting edge of the inner needle is beveled in the shape of a V. The technic consists of little more than the simple insertion of the two needles, one within the other, in the same manner in which an aspirating needle would be inserted. Local anesthesia is used, and a small incision is made in the skin before the needle is inserted both to facilitate its entrance through the chest wall and to eliminate the possibility of including skin in the biopsy specimen, which might lead to an incorrect diagnosis of squamous cell carcinoma. The proper selection of cases is the first principle of both safety and success. Tumors in the trachea, the bronchi or the primary bronchial subdivisions, which are readily accessible through a bronchoscope, should not be subjected to puncture through the chest wall. Punch biopsy is applicable only to tumors situated in the periphery of the lung near the pleural surface, and the site of puncture should be the point at which the lung tumor is most superficial, this location having been determined by the taking of roentgenograms in various positions.

Measles Complicating Pregnancy. — Dyer observed twenty-four cases of measles complicating pregnancy over a period of three months. These cases were discovered in the rural district included in the five county demonstration area in northeastern Oklahoma. The occurrence of a rather widespread epidemic over a five county area provided data which offer an opportunity to present comparative figures, some of which are at variance with the information thus far presented in the literature. In the present material the age of occurrence ranged between 14 and 42 years. Pregnancy was interrupted in 37.5 per cent, and 25 per cent of these were at or near term. Three babies exhibited measles at birth or two days later. A laparotrachelotomy was performed on one mother at the height of her exanthem because of a pelvic contraction and persistent labor. There was no maternal mortality, but the postpartum course of one woman was febrile. This was three weeks after the attack of measles. The author thinks that measles probably occurs more frequently during pregnancy than the literature of the last twenty years indicates. The effects on pregnancy were, however, not so serious as is indicated in the literature.

Southwestern Medicine, El Paso, Texas

24:149-184 (May) 1940

Organized Medicine: A Professional Guild. D. F. Harbridge, Phoenix, Ariz.—p. 149.
Tube Decompression in Intestinal Obstruction. L. C. Bennett, Los Angeles.—p. 152.
Spinal Injuries with Nerve Damage. R. M. Stuck, Denver.—p. 157.
Treatment of Inflammatory Lesions by Radiation. D. von Briesen, El Paso, Texas.—p. 160.
*Treatment of Cancer of Breast by Combined Irradiation and Operation. L. Eloesser, San Francisco.—p. 162.
Extradiabetic Uses of Insulin. A. T. Goldberg and M. M. Schatz, Fresno, Calif.—p. 165.

Irradiation and Operation for Cancer of Breast.—Eloesser describes a method for treatment of mammary cancer which includes (1) preoperative irradiation of the breast, axilla and supraclavicular regions (from 600 to 900 roentgens to each area), (2) removal of the breast, dissection of the axilla with a Percy cautery and (3) intra-operative delivery of a heavy dose (from 2,500 to 3,000 roentgens) of unfiltered or lightly filtered x-rays to the open wound for cancers with probable axillary involvement. The ray is centered toward the areas that appear most suggestive. This treatment takes from twelve to eighteen minutes. The purpose of this heavy intra-operative irradiation is different to that of the mild preoperative course. Preoperative treatment is given with the idea of making the fields into which cancer cells may likely be scattered during operation unfit for their future growth. It is kept moderate so that the lymphoid defense will not be broken down and the patient upset. It is not prolonged, so that the operative area may not be scarry and stiff and likely to break down later. The massive

dose delivered during operation is sufficient, in theory at any rate, to kill cancer cells traversed by it. Necrosis and sloughing are not to be feared, as fascia, muscle, nerves and vessels that fall into the field are resistant to x-ray necrosis; the skin is kept shielded and out of the way. Even though aseptic necrosis may occur in the deeper soft parts later, these are protected by normal skin from ulceration and sloughing. The absence of cutaneous recurrences or lenticular metastases even in patients whose cancers reached the corium has fully borne out Murphy's experiments on mice on the value of cutaneous irradiation as a protection against implants. Not only the skin but other areas of lymphatic tissue seem to have been protected by the preoperative and intra-operative irradiation. The author states that there have been a few deviations from the foregoing plan, which has been constantly followed for twenty years.

Surgery, St. Louis

7:647-808 (May) 1940

*Results of Gastro-Enterostomy in Gastric and Duodenal Ulcers: Report of 106 Cases Followed for an Average of 7.1 Years Postoperatively. R. E. Church and J. W. Hinton, New York.—p. 647.

*Carcinoma of Gallbladder: Etiologic Role of Gallstones. R. Warren and F. G. Balch Jr., Boston.—p. 657.

Choice of Operative Methods for Carcinoma of Rectum. F. W. Rankin, Lexington, Ky.—p. 667.

Acute Nonmalignant Perforations of Colon. J. Koucky and W. C. Beck, Chicago.—p. 674.

Treatment of Postoperative Abdominal Distention with Prostigmine. E. J. Gordon, New York.—p. 686.

Effect of Colchicine on Human Carcinoma. L. Seed, D. P. Slaughter and L. R. Limarzi, Chicago.—p. 696.

Cystometric Timing of Catheter Removal from Neurogenic Bladder. M. Muschat, Philadelphia.—p. 710.

Study of Varicose Veins: Report of 600 Cases. S. Z. Hawkes and G. F. Hewson, Newark, N. J.—p. 714.

Intracystic Papilloma of Breast. N. F. Hicken, Salt Lake City.—p. 724.

Surgical Treatment of Roentgen and Radium Dermatitis. R. K. Ghormley and R. D. Fairchild, Rochester, Minn.—p. 737.

Investigation of Traumatic Shock Bearing on Toxemia Theory. D. B. Kendrick Jr., H. E. Essex and H. F. Helmholz Jr., Rochester, Minn. —p. 753.

Ununited Fracture of Neck of Femur: Report of Fifty-Nine Consecutive Cases. P. B. Magnuson, Chicago.—p. 763.

Anatomic and Roentgenologic Study of Wrist Joint: Observations on Case of Recurrent Radiocarpal Dislocation Complicating Madelung's Deformity and Its Surgical Correction. T. Horwitz, Philadelphia.—p. 773.

Mallet or Baseball Finger. E. B. Kaplan, New York.—p. 784.

Gastro-Enterostomy in Gastric and Duodenal Ulcers.—Church and Hinton report the results of continuous follow-up of 106 cases of gastro-enterostomy for periods of at least one year and for an average of 7.1 years. The continuous follow-up was based on the belief that a single observation after a lapse of one or several years is quite misleading. The symptomatology of peptic ulcer is a cyclic phenomenon. Unless there are frequent periods of observation, this periodicity may be lost sight of. The authors tried to follow their patients at intervals of three months and to make x-ray examinations every six months. The 106 patients have been tabulated in three categories. In the group of the cured were placed all patients who have been symptom free since operation, have eaten regular food, have performed their customary duties and have resumed their normal positions in life. There were twenty-six (24.5 per cent) in this group. In the group of the benefited were included those persons who, although suffering from a mild recurrence of symptoms and mild digestive disturbances, were able to resume their former activities. These patients must observe dietary restrictions and supplement them by occasional medication. Thirty-one cases, or 29.2 per cent, belong to this group. The category of the unimproved included patients who received no relief or who actually became worse as well as those who experienced recurrences of symptoms with their original intensity. There were forty-nine patients (46.2 per cent) in this group. Twenty, or 18.8 per cent, of 106 patients were found by two or more x-ray examinations or by operation to have gastrojejunal ulcers. In these cases the average time before the ulcer was proved was 4.95 years. In six others (5.6 per cent) one x-ray examination and the symptomatology suggested gastrojejunal ulcer. In these the average time before the condition was suggested was three and one half years. Preoperative hemorrhage had occurred in fifteen of the 106 cases. Seven, or almost 50 per cent, of these had postoperative hemorrhages, at an average of 4.43 years after operation. In ninety-one cases in which operation was performed in the absence of preoperative hemorrhage, postoperative hemorrhage occurred after a similar lapse of time in fifteen, or 16.5 per cent. The end results of gastro-enterostomy in cases of obstruction and acute perforation are illuminating; in 63 per cent of the obstruction group improvement resulted, while 27 per cent were unimproved or were made worse. The results obtained by the authors do not produce so favorable a view of gastro-enterostomy as is generally presented by other writers. They think that this is presumably due to the longer follow-up period.

Gallstones and Carcinoma of Gallbladder.—According to Warren and Balch, a numerical expression of the risk of developing carcinoma that a person with gallstones runs would be of great help in deciding on the proper form of treatment of a patient in whom stones have been discovered but in whom symptoms are minimal or absent. It was with this point in mind that the present study was undertaken. The sources of information have been the files of the Massachusetts General Hospital and the medical literature. Between January 1898 and June 1939 there were admitted to the hospital eighty-four cases of primary carcinoma of the gallbladder. All cases of carcinoma of the bile ducts were excluded from this series. Other statistics were gathered from 8,000 consecutive necropsies between 1896 and 1936, from 109,646 consecutive hospital admissions from January 1925 to June 1939, and from 1,528 operations for cholelithiasis from January 1925 to December 1936. The authors found that carcinoma of the gallbladder is not a frequent disease in their locality, occurring in the present series about one third as commonly as carcinoma of the pancreas. Although carcinoma of the gallbladder may occasionally develop in the absence of gallstones, the great majority of cases are associated with gallstones which precede the development of the tumor. The exact percentage of cases of gallstones in which carcinoma of the gallbladder develops is impossible to determine accurately but probably lies between 1 and 2.5. No clinical criteria have been established to tell in which cases of gallstones carcinoma of the gallbladder will develop. Although carcinoma of the gallbladder is practically incurable once the diagnosis is established clinically, the risk of carcinoma developing in any case of gallstones is so small as not to indicate prophylactic cholecystectomy for that reason alone. The decision as to the advisability of cholecystectomy in cases of gallstones with few or no symptoms should be governed by a consideration of the danger of nonmalignant complications rather than by the risk of carcinoma of the gallbladder.

Western J. Surg., Obst. & Gynecology, Portland, Ore.

48:275-332 (May) 1940

*Pneumonectomy for Bronchiogenic Carcinoma: Report of Five Cases with Operative Recovery in Four. P. C. Samson, Oakland, Calif., and E. F. Holman, San Francisco.—p. 275.

Gross Physiologic Principles of Head Injury Treatment. H. v. Briesen, Los Angeles.—p. 284.

*Sterilization Procedures on Women. E. M. Lazard, Los Angeles.—p. 294.

Some Endocrine Factors Responsible for Sterility in Women. E. C. Hamblen, Durham, N. C.—p. 300.

Endocrines and Calcium Metabolism. L. Gunther, Los Angeles.—p. 304.

Abdominal Pregnancy at Term: Case Report. R. N. Hamblen, Spokane, Wash.—p. 310.

Disturbance of Carbohydrate Metabolism in Hyperthyroidism. H. J. John, Cleveland.—p. 313.

Fallacies of Delayed Treatment of Perforative Appendicitis. C. A. Bachhuber, Los Angeles.—p. 317.

Zinc Salts: Eventual Therapeutic Resource in Utero-Ovarian Troubles. H. Vignes, Paris, France.—p. 320.

Hyperparathyroidism—Normal Chemistry—Rapid Recalcification Following Removal of Large Parathyroid Adenoma. C. J. Baumgartner, Los Angeles.—p. 324.

Pneumonectomy for Bronchiogenic Carcinoma.—Samson and Holman report total pneumonectomy for pulmonary carcinoma of five patients with four postoperative recoveries. Two of these patients are well (seven months and one year), one died one year after the pneumonectomy from coronary thrombosis and one was well for four months, after which signs of probable cerebral metastasis appeared. There was no evidence of recurrence or metastasis in the patient who died. The

authors state that pneumonectomy should no longer be considered as heroic surgery but in competent hands as an accepted method of treatment. Only seven years has elapsed since the first successful operation, but all indications point to an increasing number of cures and a substantial reduction in the operative mortality. As to the relative merits of lobectomy and pneumonectomy, they feel that lobectomy should be mentioned only to be condemned. Even with peripheral neoplasms the necessary mass ligation used in lobectomy is inadequate and unsurgical. Total pneumonectomy is entirely analogous to radical resection for carcinoma elsewhere in the body. Preoperative preparation, anesthesia, operative technic and postoperative care are all equally important factors in a successful pneumonectomy. As with carcinoma elsewhere, relatively early diagnosis is paramount if surgery is to be effective. Bronchiogenic carcinoma should be always kept in mind when an unexplained and persistent cough or thoracic symptom complex is presented. When the textbook picture of carcinoma of the lung (great loss of weight, pain in the chest, pleural effusion, copious purulent sputum, blood streaking and hemoptysis) is present it is too late to do more than to make a diagnosis. The condition must be suspected earlier and adequate confirmation sought by x-ray examination, fluoroscopy, bronchoscopy and biopsy.

Sterilization Procedures on Women.—Lazard believes that the simplest and least dangerous of sterilization procedures on the tubes is the crushing and tying of a loop of each tube, the Madlener technic. However, failures have been reported with this as well as with all the other methods of tubal sterilization. Ectopic pregnancies have been reported following such sterilization, and such procedures carry a definite increase in mortality risks because of embolism and intestinal adhesion and obstruction. For elective sterilization at the time of cesarean section he has favored supracervical hysterectomy over any method of tubal sterilization. The main objections to hysterectomy are that it is technically more difficult and that it subjects the patient to a premature menopause. It is the surest and safest method of sterilization. There was no fatality in 106 consecutive cases of elective hysterectomy for sterilization. If there is no associated pathologic condition, it does not as a rule produce the menopause unless the patient is at or near the menopausal age, in which case the menopause is not caused by the hysterectomy but by the changes in the ovaries due to age. Removal of the body of the uterus eliminates the possibility of future pathologic changes, such as fibroids, malignant conditions of the body or uterine endometriosis. The patient and her husband should understand that this sterilization is permanent.

Yale Journal of Biology and Medicine, New Haven

12:451-604 (May) 1940

Lesions of Larger Vessels Following Renal Artery Constriction. M. C. Winternitz and L. L. Waters, New Haven, Conn.—p. 451.
Postoperative Management of the Neurosurgical Patient, with Particular Reference to Nursing Problems. O. Turner, New Haven, Conn.—p. 459.
Differentiation Between Sarcomatous and Leukemic Lymphocytes in Mice. A. Kirschbaum, W. U. Gardner, R. Nahigian and L. C. Strong, New Haven, Conn.—p. 473.
Electrometric Study of the Healing Wound in Man. H. S. Burr, M. Taffel and S. C. Harvey, New Haven, Conn.—p. 483.
Immunization with Tetanus Toxoid: The Recall Response. H. B. Strenge, New Haven, Conn.—p. 487.
Renal Hypertrophy in Mice Receiving Estrogens and Androgens. C. A. Pfeiffer, V. M. Emmel and W. U. Gardner, New Haven, Conn.—p. 493.
Study of Temperature and Electric Potentials in Menstrual Cycle. Dorothy Smith Barton, New Haven, Conn.—p. 503.
Effect of Antituberculosis Serum on Development of Experimental Tuberculosis of Skin. R. M. Thomas and F. Duran-Reynals, New Haven, Conn.—p. 525.
Effect of Ablation of Hypophysis on Weight of Kidney of Rat. M. McQueen-Williams and K. W. Thompson, New Haven, Conn.—p. 531.
Strain-Limited Development of Tumors of Pituitary Gland in Mice Receiving Estrogens. W. U. Gardner and L. C. Strong, New Haven, Conn.—p. 543.
Further Studies on Prophylaxis of Experimental Infections and Intoxications with Various Hormone Preparations. L. Weinstein, New Haven, Conn.—p. 549.
Retardation of Mammary Involution in Mouse by Irritation of Nipples. C. W. Hooker and W. L. Williams, New Haven, Conn.—p. 559.
Physiologic Significance of Choline Esterase. D. Nachmansohn, New Haven, Conn.—p. 565.
Some Properties of Staphylococcus Culture Filtrates. G. H. Smith, New Haven, Conn.—p. 591.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Australian and New Zealand J. Surgery, Sydney

9:331-434 (April) 1940

J. H. Webb and the Early History of Appendectomy. K. F. Russell.—p. 333.
Deformities Affecting Lower Radial Epiphysis. D. J. Glissan.—p. 337.
Colonic Drainage: Plea for Cecostomy. W. Maxwell.—p. 342.
New Method of Performing Encephalography. F. F. Ellis.—p. 345.
Thoracoplasty in Pulmonary Tuberculosis: General Survey of Forty-Seven Cases. A. M. Hutson.—p. 359.
Recent Thoughts on Orthoptics. J. B. Hamilton.—p. 378.
Liver Damage in Thyrotoxicosis. N. Wyndham.—p. 385.
Technic of Panhysterectomy. F. A. Maguire.—p. 393.

British Medical Journal, London

1:799-838 (May 18) 1940

Concentrated Serum in Treatment of Traumatic and Histamine Shock in Experimental Animals. C. H. Best and D. Y. Solandt.—p. 799.
Successful Chemotherapy for Hemolytic Streptococcus Meningitis and Pneumococcic Meningitis in the Same Patient. W. O. Reid and J. F. Lipscomb.—p. 802.
Treatment of Pneumococcic Meningitis with Sulfapyridine. S. T. Falla.—p. 804.
*Clinical Experience in Electrically Induced Convulsions. F. E. Fox.—p. 807.
Axial Rotation of Pregnant Uterus. G. S. Adam.—p. 808.

Electrically Induced Convulsions.—Fox presents a clinical account of the results obtained by electrically induced convulsions in seven psychotic patients, because he thinks that it is only by consideration of individual case histories that patients suitable for this treatment can be selected. The histories indicate that several patients had schizophrenia; others had catatonic stupor, psychiatric anxiety, depressive stupor and agitated melancholia. The author classifies the results of the electrical convulsions according to the degree of remission achieved. He designates as class A a complete return to normality and social intercourse outside the mental hospital, as class B a marked improvement in behavior, as class C no change, the patient still requiring constant attention. He places four patients in class A and the other three in class B. The electrically induced convulsions have advantages over other forms of convulsion therapy. 1. The patient suffers no unpleasant memories. 2. The loss of consciousness is instantaneous. 3. The possibility of fracture seems to be remote, provided certain precautions are taken. 4. The patient is willing to cooperate after the first two or three shocks. 5. The treatment can be quickly and easily carried out. 6. The appetite is stimulated. 7. The chronic constipation associated with these types of psychosis disappears early in the treatment. 8. The apparatus is portable. 9. The manipulator need not be a highly qualified electrical technician. Although the ultimate prognosis of this form of treatment is problematic at the present time, there seems no reason why the remissions should not be prolonged indefinitely by "maintenance" shocks if the patient is found to be relapsing. The contraindications to shock treatment would seem to be arterial and cardiac diseases, high blood pressure and intracranial diseases.

Lancet, London

1:911-954 (May 18) 1940

Blood Group Tests in Disputed Paternity: Report of Fifty Cases. D. Harley and G. R. Lynch.—p. 911.
Death in the First Month and the First Year. C. McNeil.—p. 912.
*Toxoid Treatment of Recurrent Infection After Staphylococcic Osteomyelitis. F. C. O. Valentine and E. C. B. Butler.—p. 914.
Aleukemic Lymphadenosis with Extensive Subcutaneous Deposits. Joah Bates and G. L. Haine.—p. 917.
*Response of Nongravid Human Uterus to Posterior Pituitary Extract and Its Fractions Oxytocin and Vasopressin. A. McLellan.—p. 919.
Intravenous Injection of Oxygen Under Normal Atmospheric Pressure. I. Singh and M. J. Shah.—p. 922.
Rupture of Branch of Splenic Artery Associated with Pregnancy. D. MacLeod.—p. 924.

Toxoid in Recurrent Staphylococcic Osteomyelitis.—According to Valentine and Butler, recurrence of infection after osteomyelitis is rare, but thirty patients of this type were examined at the London Hospital in less than two years. Patients in whom repeated infection takes place at the site of

war wounds in which the bone has been injured may be placed in a similar category. The authors observed two patients in both of whom recurrence had been frequent and had latterly caused chronic ill health. Since one of them appeared to derive much benefit from injections of toxoid, the authors decided to investigate the degree of immunity prevailing in patients with recurrence and to study the effect of the treatment in cases in which recurrence had been frequent. The object was to maintain the level of immunity in order to lessen the tendency toward further attacks. Serologic investigations convinced them that the titers of antihemolysin do not suggest that much immunologic significance can be attached to this antibody but that it is at least possible that the general symptoms in staphylococcic infection are largely due to the alpha-hemolysin, for it has seemed to them that it is this factor rather than the leukocidin which is responsible for the reaction encountered in treatment with toxoid. Toxoid has therefore been prepared from toxins mixed to give a strong leukocidin and a moderate hemolysin. Beginning with 0.2 cc. of a 1 in 20 dilution the authors have used weekly injections until the patient could take the maintenance dose of 0.3 cc. of undiluted toxoid intramuscularly in the deltoid. This dose is then given at intervals of two or three months. The injections are continued for a period of years to maintain a high level of antitoxic immunity. Antitoxins in the serum of these patients are seldom high and often within normal limits. Antitoxins may reach higher levels in the pus than in the serum. The results suggest that a titer of about 0.32 K antileukocidin is usually required for the localization of infection in soft tissues. There has not yet been time to evaluate the treatment in preventing further recurrence. It is possible that occasionally the injections may stimulate activity in a new latent focus. The treatment is probably of value in cases with symptoms of persistent toxemia; e. g., war wounds.

Response of Nongravid Uterus to Solution of Posterior Pituitary.—McLellan recorded uterine contractions of forty-three women at various stages of the menstrual cycle. Sixty records were obtained. The women were all of reproductive age, 20 to 40, and thirty-four had borne children. Menstruation was regular at the time of observation. The movements of the uterus were recorded by introducing a small rubber bag filled with water into the uterus and by registering the changes in volume. The cervix was dilated to No. 6 Hegar. When the uterine movements had become more or less constant, graduated doses of the posterior pituitary fractions were administered intravenously. The reactivity of the uterus to solution of posterior pituitary and its fractions was determined by finding the minimal effective doses of these at various stages of the menstrual cycle. Twenty-eight of the sixty records showed that the uterus responded to solution of posterior pituitary or its fractions. The records comprising the responsive group were obtained immediately before or during menstruation and in the early interval part of the cycle; that is, the uterus responded to solution of posterior pituitary immediately before and during menstruation and in the early interval part of the cycle. The nongravid human uterus is caused to contract by vasopressin and not at all by oxytocin.

1:955-992 (May 25) 1940

Rational Approach to Research in Chemotherapy. P. Fildes.—p. 955.
Treatment of Fractures of Upper Third of Shaft of Femur. J. R. Armstrong.—p. 957.
Vitamins D_2 and D_3 and Dihydrotachysterol in Congenital Thyroid and Parathyroid Deficiency. H. P. Himsworth and M. Maizels.—p. 959.
*Potency of Vitamins D_2 and D_3 in Osteomalacia and Late Rickets. Dagmar Curjel Wilson.—p. 961.
*Protamine Zinc Insulin and Soluble Insulin: Interaction in Combined Doses. G. M. Wauchope.—p. 962.

Vitamins D_2 and D_3 for Osteomalacia and Rickets.—To test the antirachitic potency of vitamins D_2 and D_3 Wilson chose Indians living an outdoor life in the Kangra valley. Rickets and osteomalacia affect the inhabitants of both sexes at all ages. In assessing the value of treatment attention was paid to subjective symptoms, including pain in the lumbosacral region, pelvic girdle, legs, ribs, shoulder girdle and arms; flexor (carpopedal) spasm was also taken into account. The patients were chiefly women from 20 to 40 years of age. Males also were included and the total range was from 6 to 70 years. Patients with osteomalacia or with late rickets of similar grades of severity were grouped in pairs. Pure vitamin D_2 was given to one of each pair and pure vitamin D_3 in the same dosage to the other. The deformity and pain before treatment and the improvement after treatment were assessed independently by members of the staff of the Canadian Mission Hospitals. The patients were examined weekly and the degree of improvement was classified as none, slight, definite, good or cured. One large dose of either vitamin was given once a week. The observations were made on thirteen pairs of patients with osteomalacia and two pairs with late rickets, and treatment was continued for three or four weeks. The dose given to both members of a pair was either 10,500 or 21,000 international units of vitamin D weekly. With a weekly single dose of 10,500 international units of either vitamin progress was extremely slow and the patients noticed little improvement in their symptoms after two such weekly doses, became restive and were unwilling to have further treatment. Improvement followed subsequent treatment with a weekly single dose of 21,000 international units. With vitamin D_2 the results were definite in six, good in four, cure in four and slight in one, and with vitamin D_3 they were definite in six, good in six and cure in three. Of the fifteen pairs of patients, five pairs were treated with 10,500 international units from the start and observed for two or three weeks before the dose was increased. Another group of four pairs received 21,000 international units from the start. The results indicate that there was no difference in the clinical effectiveness of the two forms of the vitamin. However, the results obtained in the five pairs treated with the minimal dose show vitamin D_2 as the more active in one case and vitamin D_3 as the more active in three cases, while the two vitamins were of equal activity in one case. No ill effects were observed. In comparison with the degree of cure previously effected in treating similar cases with approximately the same total vitamin dosage but administered daily as cod liver oil or as irradiated ergosterol, the use of the spaced large doses was considered to shorten the treatment by at least two weeks.

Protamine Zinc Insulin and Soluble Insulin.—Wauchope states that the total quantity of insulin can be still further reduced if the doses of ordinary or soluble insulin and protamine zinc insulin are given in separate injections, one immediately after the other, instead of being drawn into the same syringe and injected together. Seventeen hospital patients, women of more than middle age, who were being balanced on a combined dose of the two kinds of insulin, had blood sugar curve estimations on two different days: on the first day the protamine zinc insulin and soluble insulin were given in the same syringe and on the second day they were given separately. The two postinsulin blood sugar curves of these seventeen patients and those of five long standing cases of diabetes in full activity were plotted, one in each case being estimated after separate injections and the others after the two kinds of insulin had been mixed in the syringe. When the two insulins were drawn into the same syringe, the action of the ordinary insulin was modified. Some of it was delayed in action and some of it apparently lost. In all cases a larger proportion of soluble insulin was needed when given in the same syringe with protamine zinc insulin to produce a hypoglycemic action in the early part of the day. Therefore it seems that more economical and more accurate balancing is ensured when soluble insulin and protamine zinc insulin are given in separate injections. If drawn into one syringe they must not be allowed to mix. The hardened diabetic patient does not mind two pricks, and all who lead active lives prefer to take all their insulin in the morning rather than have to remember a second injection; hence the use of the two insulins is preferred by the patient and besides it ensures a more steady blood sugar level throughout the day and night.

Tubercle, London

21:185-216 (March) 1940

Mass Radiologic Examination of Chest. S. C. Shanks.—p. 185.
Technic Problems of Mass Radiography of Chest. P. G. Sutton.—p. 192.
Unsuitable Pneumothorax Treatment. S. Puder.—p. 197.

Annali dell'Istituto "Carlo Forlanini," Rome

4:157-300 (March-April) 1940. **Partial Index**

*Pneumolysis (Jacobaeus' Operation) in Treatment of Hemoptysis. M. Morellini.—p. 157.
Lateral Diffusion of Pulmonary Tuberculosis in Elastic Anterolateral Thoracoplasty: Clinical and Pathogenic Study. M. Mario.—p. 193.

Pneumolysis in Tuberculous Hemoptysis.—According to Morellini, intrapleural pneumolysis (Jacobaeus' operation) is indicated in all cases of grave hemoptysis which occur in the presence of inadequate artificial pneumothorax and which cannot be controlled by increasing intrapleural pressure and by symptomatic treatment. The operation is performed under pleuroscopic control. When the adhesions cannot be completely resected, partial resection is done. The operation was successful in six grave cases reported by the author.

Atti d. Soc. Ital. di Ostetricia e Ginecologia, Rome

36:125-234 (March-April) 1940. **Partial Index**

Lack of Coagulating Power in Blood of Maternal Placenta. F. D'Erchia.—p. 140.
*New Symptom of Renal Insufficiency in Albuminuria of Pregnancy. G. Piroli.—p. 142.

New Symptom in Albuminuria of Pregnancy.—Piroli observed the behavior of urea and nitrogen in the blood of ten pregnant women with albuminuria and in eight nonpregnant women with either liver disease or acute or chronic nephritis. Quantitative determinations of the blood were made three times with intervals of four hours in the course of one day and the determinations were repeated after an interval of several days. Patients were kept on water as the only drink during the days on which the determinations were made. Ambard's method was used. The women were between the seventh month of pregnancy and full term. Albuminuria with edema of the legs was pronounced in five cases and moderate and without evidence of edema in five. Azotemia remained unchanged in all patients in the last group, whereas it showed great oscillations in the blood of patients with grave albuminuria, as well as in the blood of the patients with liver and renal disease. The author found that moderate albuminuria may be controlled by either diet or medical therapy and that it disappears spontaneously after delivery. Grave albuminuria is more or less resistant to diet and medical therapy. It may diminish with either, or spontaneously after delivery, but in no case does it disappear entirely. The oscillations of ureo-azotemia in this group are independent of diet but are in proportion to the acuteness of albuminuria. The author concludes that changes of ureo-azotemia in albuminuria of pregnancy are an index of renal insufficiency and that variations within high figures show grave and probably irreversible renal lesions.

Gazzetta digli Ospedali e delle Cliniche, Milan

61:341-360 (April 28) 1940. **Partial Index**

*Diffuse Muscular Metastases from Cancer of Sigmoid Flexure. A. Cattaneo and R Storti.—p. 347.

Diffuse Muscular Metastases from Cancer.—According to Cattaneo and Storti, the development of multiple cancer metastases in striated muscles is rare. They report a case, in a man aged 29, of a primary adenocarcinoma of the sigmoid flexure which ran a rapid course and gave rise to diffuse metastases to the viscera, the skeletal bones and striated muscles. A diagnosis of true cancer metastases of the striated muscles was made by a biopsy. It was verified by a postmortem examination during which a small tumor was found at the sigmoid flexure which, on microscopic study, proved to be an adenocarcinoma.

Riforma Medica, Naples

56:465-500 (April 13) 1940. **Partial Index**

*Diabetes as Cause of Diminishing Urinary Elimination of Hyperglycemic Substance. L. Antognetti and V. Patrono.—p. 467.
Physical Therapy of Poliomyelitis. G. Tullio Cataldo.—p. 475.

Diabetes and Hyperglycemic Substance.—Antognetti and Patrono stated in a previous communication that normal urine was found to contain a hyperglycemic substance. The present investigation concerns the urine of patients with diabetes mellitus and of a patient with hypophysial adenoma, acromegaly and insulin resistant diabetes. Extracts of individual specimens of urine were injected into rabbits and the glycemic reaction was determined. Injection of extract of urine of patients with diabetes mellitus caused hyperglycemia, which was higher than that caused by normal urine, whereas the injection of extract of urine of the acromegalic diabetic patient caused hypoglycemia. The authors express the opinion that the hypothetic substance is of hypophysial origin, is diabetogenic and is related to hypoglycemic hypophysial substances. Moderate hypophysial dysfunction results in overproduction of hyperglycemic substances, which is a factor of importance in the pathogenesis of hyperglycemic diabetes. In the presence of a grave disturbance of the hypophysial function and a severe anatomic lesion, hypoglycemic substances predominate and constitute the pathogenic factor of insulin resistant diabetes. Further researches along these lines are suggested.

Kinderärztliche Praxis, Leipzig

11:143-178 (May) 1940. **Partial Index**

*Clinical Aspects and Therapy of Adiposal Gigantism. P. Laurentius.—p. 143.
Vitamin B_6 not Effective in Eczema of Nurslings. K. Schwartzer.—p. 148.
Importance of Oxyuriasis and Treatment by Means of Resorcinol Derivative. H.-C. Hempel.—p. 149.
*Symptomatic Treatment of Serum Collapse. P. von Kiss and I. Flesch.—p. 155.
Two Attacks of "Generalized" Stomatitis Aphthosa of Unusual Severity. A. Windorfer.—p. 160.
Suggestions for Treatment of Weakness of Feet During Early Childhood. B. Roether.—p. 164.

Clinical Aspects and Therapy of Adiposal Gigantism.—Laurentius discusses adiposal gigantism, a temporary obesity of the puberal age which is frequently mistaken for disorders with a similar symptomatology but an entirely different pathogenesis. Thirty-four cases are reported. The history revealed, as a rule, that the obesity began at the age of 9 or 10 years. With the exception of seven cases, the food intake was not excessive; in ten cases the parents regarded it as deficient. The sudden increase in weight set in, in a few instances, after a severe or prolonged illness. The general complaints of these children are usually slight. Occasionally they complain of fatigue and of being unable to fulfil the requirements in gymnastics and in sports. The clinical examination discloses an excess of fat particularly on the chest, abdomen, hips and thighs. The excess in weight of these children, who vary in age between 9 and 14 years, amounts to from 5 to 26 Kg. (average 14 Kg.). The height is on the average 12 cm. above normal. The bony structure is surprisingly large and strong. This form of obesity is usually accompanied by a seemingly deficient sexual development. Follow-up examinations, however, disclosed that the hypogenitalism is apparent rather than real. The smallness of the penis may be simulated by the excess of adipose tissue. The circulatory organs are as a rule not impaired, and metabolic studies corroborated Niederwieser's observation that the basal metabolic rate is important only in cases of thyrogenic obesity. X-ray examination of the sella turcica and inspection of the fundus oculi give negative results. There is no agreement as to the etiology of adiposal gigantism, but it is suggested that a temporary dysfunction or hypofunction of the thyroid, the hypophysis and the gonads plays a part. The disorder may be mistaken for adiposogenital dystrophy (Fröhlich's syndrome). Differentiation here is important in the interest of a correct prognosis, which is favorable in adiposal gigantism but not favorable in adiposogenital dystrophy. Adiposal gigantism differs from the purely exogenic type of obesity in that the growth in length is not abnormal in the latter. A differential diagnosis is likewise important in the therapy of adiposal gigantism. A restriction of calories is tried and, if the decrease in weight is inadequate, endocrine treatment is begun by administering thyroid, gonadal and anterior pituitary extracts.

Symptomatic Treatment of Serum Collapse.—Von Kiss and Flesch observed severe circulatory disturbances in eleven patients who had received heterologous serum. Seven were less than 15 years old. The diagnosis is not difficult, because the collapse is usually preceded by the other symptoms of serum disease. Differentiation from diphtherial disturbances of the heart is possible not only on the basis of the difference in the

clinical picture but also on the basis of electrocardiographic examinations and of serial blood pressure controls. In diphtherial heart disease the blood pressure decreases gradually in the course of days, but in serum collapse it decreases rapidly almost from hour to hour. The electrocardiogram is definitely pathologic in diphtherial heart disease but not in serum collapse. Clinical observation, blood pressure determinations and electrocardiographic examinations must be continued during the treatment. At the onset of serum disease, ephedrine is given by mouth and the patient is kept in bed. If the systolic blood pressure falls to 80 mm. of mercury, epinephrine is injected at once even if there is no collapse. If pressure sinks so rapidly that collapse results before this intervention can be made, 0.1 cc. of a 1:1,000 solution of epinephrine mixed with from 10 to 20 cc. of a 20 per cent solution of dextrose is injected intravenously, and from 0.3 to 0.5 cc. of the epinephrine solution is at the same time injected into a muscle. In extremely severe cases one collapse may follow another almost hourly and the repeated insufficiency of the peripheral circulation may become complicated by a secondary cardiac failure. The cutaneous edema caused by the serum exanthem may make intravenous injections technically impossible; if this is the case a large vein must be surgically exposed, a cannula tied in and intravenous drip infusion continued for from twenty-four to twenty-eight hours. The drip fluid consists of physiologic solution of sodium chloride and 5 per cent dextrose. Necessary medicaments may be added to the fluid.

Klinische Wochenschrift, Berlin

19:241-264 (March 16) 1940. **Partial Index**

Dysentery Among Troops in Polish Campaign. H. Otto.—p. 241.
Cardiac Lesions Due to Heat Stroke as Revealed in Electrocardiograms. E. Metz.—p. 247.
Therapeutic Effect of Dried Thyroid Gland Extracts in Goiter. E. Vertán.—p. 250.
*Endocrine Therapy in Hypertrophy of Prostate: Case. F. Bühler.—p. 254.
Vitamin C Deficiency in Exclusive Meat Diet. H. Rietschel.—p. 256.

Testosterone Propionate in Hypertrophy of Prostate.—According to Bühler, testosterone propionate in massive doses promptly administered alleviates difficulties in urinating and associated distress even in advanced hypertrophy of the prostate. A man aged 72 had suffered from anuria for three days and the residual urine amounted to 1,500 cc. After twelve days of a daily dose of 25 mg., urination set in spontaneously. Three weeks later, dosage having been discontinued after the nineteenth day, the residual urine was reduced to 75 cc. No relapse had been reported as late as three and one half months. This patient was given a total of 475 mg. The author employs daily doses of 25 mg. until improvement occurs, thereupon reducing the quantity to 10 mg. Massive doses are required especially in grave cases belonging to the second and third stage of hypertrophic condition. The therapy is most effective in incipient and second stage prostate enlargement; in advanced cases in which surgical intervention is contraindicated because of the age of the patient or other complications, testosterone gives relief from pain. The author believes that the drug has prophylactic value if applied at the first signs of prostatic enlargement and that the study of constitutional types and a classification of their characteristics might indicate those in whom a predisposition to hypertrophy of the prostate exists.

19:337-360 (April 13) 1940

*Active Protective Vaccination Against Bacillary Dysentery. R. Prigge.—p. 337.
Vitamin A Content of Some Vegetable Oils: Remarks on Report of Maxim and Bors.—p. 342.
Estimation of Conduction Time in Electrocardiogram. P. Scheer and D. Albers.—p. 343.
Sympathetic Nervous System and Vitamin A Exchange. W. Thicle and P. Guzinski.—p. 345.
Studies on Differing Insulin Sensitivity of Diabetic Patients. D. Decaneas and K. Uiberrak.—p. 347.
Investigations on Calcium Content of Normal Skin Compared with Aspects of Scleroderma. H. Kaether and K. W. P. Schaefer.—p. 353.

Vaccination Against Bacillary Dysentery.—According to Prigge the efforts to obtain a practical method of vaccination against bacillary dysentery have advanced chiefly along two routes: to produce a local immunity of the intestinal wall by the oral administration of killed dysentery bacilli or to confer an effective protection by the parenteral, particularly the subcutaneous, administration of the entire body substance or of certain cellular constituents of the dysentery bacilli. It is now generally accepted that the Shiga-Kruse bacillus produces not only a toxin but also an endotoxin. The so-called toxin-deficient dysentery bacilli (Flexner, Kruse-Sonne and Schmitz bacilli) differ from the Shiga-Kruse bacilli in that they produce only an endotoxin (Schmitz bacilli produce small quantities of toxin in addition to the endotoxin). The endotoxins of the three "toxin-deficient" dysentery bacilli are readily differentiable from the endotoxin of the Shiga-Kruse bacillus. The protective immunization against the "toxin-deficient" dysentery bacilli has already been solved in its fundamental aspects. A polyvalent Flexner vaccine consisting of killed organisms was used with success in 1917. Effective protection against Shiga-Kruse dysentery is much more difficult and can be expected only if the vaccines contain both antigens, the endotoxin as well as the toxin, and if they contain large quantities of antigen which must be introduced into the organism in a suitable combination in order to avoid toxic actions. The author describes experiments with so-called ETA vaccines which contain endotoxin and toxin in combination with a specific antiserum or a nonspecific adsorbent. He found that the vaccines prepared according to the ETA principle produce in animals as well as in human subjects an immunizing alteration against the toxins of dysentery bacilli (Shiga-Kruse). Vaccinated animals tolerate an amount of toxin that is equivalent to twice the fatal dose in nonvaccinated animals. Serologic tests on human subjects disclose that after vaccination specific protective substances appear in the blood. The vaccines can be prepared in such a way that the reactions resulting from their administration are kept within tolerable limits. A final estimate of the efficacy of the ETA vaccines will be possible only on the basis of extensive clinical experience. If vaccination against dysentery is to be put into practice, polyvalent mixed vaccines must be employed which, in addition to the antigens of the Shiga-Kruse bacillus, contain also those of the most important "toxin-deficient" dysentery bacilli, Flexner and Kruse-Sonne.

Münchener medizinische Wochenschrift, Munich

87:501-524 (May 10) 1940. **Partial Index**

Amputation and Increase in Blood Pressure. A. Bommes.—p. 501.
Experiences with Foot Amputation According to Pirogoff. K. Guth.—p. 502.
Vaccination Against Bacillary Dysentery. R. Prigge.—p. 503.
Peculiar Course of Chronic Osteomyelitis of Isolated Thoracic Vertebra. F. Schulz.—p. 507.
Changes in Conceptions of Causes of Diseases. E. Krueger.—p. 508.
*Electrical Convulsions in Psychiatry. A. von Braunmühl.—p. 511.
Loss of Therapeutic Action of Quartz Lamps with Age. E. Hasché.—p. 514.

Electrical Convulsions in Psychiatry.—Von Braunmühl directs attention to electrically induced convulsions, a method introduced by Cerletti and Bini and subsequently employed by Sogliani and other investigators. The correctly dosed electrical convulsion is characterized by immediate loss of consciousness and instantaneous onset of convulsions. The immediate loss of consciousness prevents unpleasant sensations. The electrically induced convulsions greatly resemble the metrazol convulsions. Whereas chemical convulsive agents exert a gradual and indirect stimulus on the parenchyma of the brain, the electrical method has an instantaneous and direct effect. This is clearly indicated by the convulsive reactions of the muscle groups of the lower extremities (jumping-jack movements). The apneic stage of electrical convulsion is short and respiration is quickly restored. Nausea or vomiting has not been observed. Surgical complications, such as dislocations of the jaw and compression fractures of the vertebrae, have been reported. Proper placement of the patient is therefore of great significance. A distinct advantage of the electrical convulsion therapy is that the veins do not have to be touched. These advantages and the fact that its effects are not inferior to those of chemically produced convulsions make the electrical method the therapy of choice. The electrical convulsion therapy is valuable in testing responsiveness in the old cases of schizophrenia and in the cases with a phasic course

in which relapses are likely. The author thinks that it might be possible to prevent the relapses by giving a short series of convulsions at intervals of one or two years. Such prophylactic application of electric shock is justified, since experiences heretofore have proved it harmless.

Zeitschrift für klinische Medizin, Berlin

137:243-364 (Feb. 26) 1940. **Partial Index**

*Pathogenesis, Clinical Aspects and Therapy of Serum Sickness in Diphtheria. H. Hertel.—p. 243.
Transient Pulmonary Infiltrations With and Without Eosinophilia of Blood. H. Löhr.—p. 297.
Clinical Evaluation of Atrophic Cirrhosis of Liver Proved at Necropsy. R. Schubert.—p. 328.
*Massive Doses of Eupaverine (a Morphine Derivative) in Embolism, Angina Pectoris and Bronchial Asthma. O. Dopffel and H. Kutschera-Aichbergen.—p. 341.
Spectrography of Gastric Juice in Poisoning. J. Várady.—p. 354.

Serum Sickness in Diphtheria.—Hertel reports the drastic decrease (from a preceding average of 17.4 per cent to one of 3.7 per cent) in serum sickness complicating diphtheria observed during the course of nine and a half years and coincident with the adoption of a combined intravenous and intramuscular injection procedure, supported by a regimen of fruit and vegetable juices and daily enemas. The study was confined to 1,095 consecutive cases of diphtheria exhibiting 135 instances of serum sickness, three fourths of which occurred in children under 14 years of age. The greatest incidence of serum sickness was observed during the months of January, February and March. It was treated by slowly administering intravenously from 2 to 3 cc. of serum solution (from 2,000 to 3,000 international units) followed by intramuscular injections. The treatments were seconded by a complete withdrawal of the usual food, replaced by abundant juices. Twice daily enemas medicated with glycerin were administered. Istizin was given as a laxative. Subjective symptoms such as pruritus usually disappeared within twenty-four hours. Treatments were continued for three days after the cutaneous manifestations had disappeared, a vegetable and fruit diet bridging over the next two days before normal food ingestion was resumed. Recurrence following the violation of dietary directions promptly yielded with a return to the regimen. The author attributes the success of the therapy to the two phase injection plan, to vitamin C replenishment by vegetable and fruit juices of the seasonally impoverished system and to detoxication through intestinal washing out of bacteria. The increasing incidence of serum sickness with age may confirm bacterial implications. He believes that the therapeutic aids usually employed for controlling serum sickness involve needless distress to the patient and should be replaced by a more physiologic regimen.

Morphine Derivative in Massive D[illegible]s.—Dopffel and Kutschera-Aichbergen report excellent results obtained by massive doses of eupaverine, a morphine derivative, in embolism, angina pectoris and bronchial asthma. Primarily employed in large doses as a last recourse in desperate cases, the drug was observed to be well tolerated, to give unexpected relief and to be productive of significant improvements. Single doses ranged from 0.12 to 0.3 Gm., with the total daily dosage as high as 2 Gm. The drug was slowly administered, usually by the intravenous route, though intra-arterial injection is also indicated. In one case, in a person aged 46, of aortal embolism complicated by diabetes and arteriosclerosis in which gangrene had occurred in the right toe with extension over the dorsum of the foot, eupaverine obviated surgical intervention. The large ulcer on the foot not only healed but the toe was saved. A patient aged 74 with a badly damaged cardiac muscle was given 1.82 Gm. of the drug; not only was the pain eased but an improvement of cardiac action was noted. In a case of bronchial asthma in which the patient, aged 40, had been treated unsuccessfully for twenty years and in which dyspneic spasms would last for hours, suggesting imminent suffocation, eupaverine would restore normal breathing within a few minutes, though it left the disease unmodified. Total dosage in this case amounted to 7.68 Gm. The authors believe that eupaverine in large doses is the best remedy for angina pectoris and that serious attacks of bronchial asthma can be promptly checked by this drug. It is contraindicated in pulmonary emphysema with cardiac lesions.

Vrachebnoe Delo, Kharkov

22:81-160 (No. 2) 1940. **Partial Index**

*Tumors of Upper Thoracic Aperture. V. Melnikov and G. L. Derman.—p. 85.
*Xiphoideus Phenomenon and Its Diagnostic Value. M. M. Lyakhovitskiy.—p. 93.
Anesthesia for Cesarean Section. A. M. Olshanetskiy.—p. 97.
Treatment of Fermentation Enterocolitis and Suppurative Enterocolitis. A. V. Pines.—p. 99.
Permissibility of Ligation of Appendix. Ya. L. Levi.—p. 103.

Tumors of Upper Thoracic Aperture.—Melnikov and Derman describe three cases of malignant neoplasm of the upper thoracic aperture. In their opinion the syndrome of Pancoast must be differentiated from the neoplasm of Pancoast, the latter being limited to a growth of branchiogenic origin arising from tissue above the dome of the pleura, whereas the former may be caused by a variety of tumors. The Pancoast syndrome includes a triad of symptoms caused by (1) symptoms of pressure on the brachial plexus, (2) symptoms due to pressure on the sympathetic trunk (Horner's syndrome) and (3) symptoms due to invasion of the ribs. The complete Pancoast syndrome is observed in (*a*) branchial cleft cancer, (*b*) bronchogenic cancer derived from the apex of the lung, (*c*) sympathicoblastomas and (*d*) supraclavicular fossa lymph node metastases. The Pancoast tumor is a definite and separate entity. It is branchiogenic in origin, does not invade the pleura or the apical lung tissue, invades and destroys the ribs, extends into the tissue of the neck and is particularly malignant. It is differentiated from tumors of the lung apex by the absence of cough and expectoration. The genesis of the Pancoast tumor is not clear. It may develop from the rests of the fourth and fifth branchial clefts, from aberrant lung tissue or from lateral aberrant thyroid. Some of these tumors may develop primarily in a rib from displaced embryonal cleft epithelium. Operative intervention in supra-pleural branchioma of Pancoast is possible in the earliest stages only. Irradiation is without effect. The intractable pain is best treated by a chordotomy or by section of the corresponding sensory roots.

Diagnostic Value of the Xiphoid Sign.—The incidence and the diagnostic value of the xiphoid sign has been observed, according to Lyakhovitskiy, in their clinic for the last ten years. Observations were made on 600 patients presenting disease of the gallbladder and the bile ducts, gastroduodenal ulcer, cancer of the stomach, the esophagus and the colon and acute abdominal emergencies. The clinical observations were verified at operation in the great majority of cases. The xiphoid sign consists in the presence of maximum tenderness at the tip of the xiphoid process, particularly on upward pressure. This sign was always present in the disease of the gallbladder or the bile ducts. Anatomic studies carried out in their clinic point to a direct lymphogenous as well as indirect lymph node connection between the gallbladder and the group of lymph nodes situated behind the xiphoid process. The author believes that acute lymphangitis and lymphadenitis just posterior to the xiphoid is the cause of the tenderness. He considers this tenderness to be a pathognomonic sign of cholecystitis and cholelithiasis.

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Renal Carbuncle. L. D. Eerland.—p. 1386.
Determination of Vitamin C Content in Blood and Urine of Patients with Cutaneous and Venereal Diseases. R. Kooij.—p. 1394.
*Ulcerative Colitis Considered from the Surgical Point of View. A. Welcker.—p. 1400.
Ureteral Fistulas: Reimplantation of Ureter into Bladder. C. van Staveren.—p. 1408.
Polyneuritis After Use of Uliron (Dimethyl-Disulfanilamide). S. J. R. de Monchy.—p. 1413.
Schizophrenia and Criminality. S. P. T. Bakker.—p. 1416.
Funicular Myelosis as Complication of Diabetes Mellitus. F. E. P. Meyjes.—p. 1420.

Ulcerative Colitis from the Surgical Point of View.—Patients with ulcerative colitis come to the surgeon, Welcker states, after having undergone treatment with diets, medicines, enemas, blood transfusions and bed rest and are often in a deplorable condition. Rectoscopy discloses severe inflammation, diffuse redness of the mucous membrane with small ulcers and considerable discharge of blood and mucus. Rectoscopy must be carefully prepared for, so that the view will not be obscured

by thin discharges, mucus, blood and pus. X-ray examination with contrast enema is of great diagnostic value, the picture being characterized by the so-called stove-pipe colon from which the normal haustra have disappeared. The course, complications and the treatment are discussed on the basis of nineteen cases observed. The author advocates colonic lavage by means of an appendicostomy or a cecal fistula. This treatment has the advantage that it can be carried out by patients themselves without interfering with their working capacity. In almost 75 per cent a good result was obtained and the opening could eventually be closed. If the regular and prolonged application of the lavage treatment does not produce the desired result, more radical methods may be considered, such as total exclusion of smaller or larger portions of the colon by an artificial anus. This treatment eventually leads to the removal of portions of the colon or rectum and has the disadvantage that the patients are unable to work for a long time.

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Bleeding During Pregnancy. J. L. B. Engelhard.—p. 1481.
Congenital Arteriovenous Fistulas. P. Formijne.—p. 1487.
Case of Pneumococcic Meningitis After Acute Otitis Media, Cured by Operation of Ramadier, Sulfapyridine and Antipneumococcus Serum. P. G. Gerlings and C. M. Kröger-Wibaut.—p. 1494.
*Observations Regarding Significance of Erythema Nodosum for Epidemiology of Tuberculosis. P. Brouwer.—p. 1501.
Diagnosis and Treatment of Scabies. E. Zurhelle.—p. 1509.
Polyneuritis as Result of Gold Poisoning. E. Hoelen.—p. 1514.

Erythema Nodosum and Epidemiology of Tuberculosis.—Brouwer selected from among a hundred patients with erythema nodosum observed by him during the years 1936-1939 a number who had a source of tuberculous infection in their environment. A group of four contacts of a patient with infectious pulmonary tuberculosis presented symptoms within a comparatively short time; three had erythema nodosum and two of these simultaneously presented pulmonary changes which were interpreted as primary pulmonary tuberculosis. In another group, five children of a woman with infectious pulmonary tuberculosis presented signs of tuberculous infection. Two of the five still showed signs of erythema nodosum and in a third the history disclosed an earlier attack of erythema. The author presents five groups which emphasize the importance of erythema nodosum as a frequently observed symptom of a usually new tuberculous infection and its importance in the campaign against tuberculosis.

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Outbreak of Attack of Glaucoma. G. F. Rochat.—p. 1597.
Sulfapyridine in Therapy of Epidemic Cerebrospinal Meningitis. W. A. Kuenen and A. J. C. Haex.—p. 1602.
Sulfapyridine in Meningococcic and Pneumococcic Meningitis. M. Weersma.—p. 1610.
Sulfapyridine in Throat, Nose and Ear Disorders. P. G. Gerlings.—p. 1616.
*Granulocytopenia in Two Sisters. N. Samsom.—p. 1623.
Oxyuris and Appendicitis. J. Schwarz and M. Straub.—p. 1627.
Several Peculiarities in "Normal" Electrocardiogram. R. van Wesel.—p. 1635.
Cure of Meningococcic Sepsis with Large Doses of Sulfanilamide. J. C. J. Burkens.—p. 1639.

Granulocytopenia in Sisters.—Samsom quotes the clinical history of a girl aged 16 who had chills, coughed and complained of pain in the left side. Treatment with sulfapyridine was instituted because pneumonia was feared. After a temporary improvement, a scarlatina-like rash was observed and this was followed three days later, when the patient was hospitalized, by severe dyspnea and cyanosis. Repeated blood examinations disclosed a rapid decrease in leukocytes. Injections of pentnucleotide, blood transfusions and other measures were without avail and the girl died. Inquiry into the family history disclosed that several years before a sister of the girl had died at about the same age as the result of granulocytopenia. Sulfapyridine had not been in use at the time of her death. It could not be determined whether she had received other medicaments that have been known to be followed by granulocytopenia such as aminopyrine, neo-arsphenamine, gold preparations or dinitrophenol. The question of a familial predisposition presents itself. It is generally believed that hypersensitivity to certain drugs is one of the most frequent causes of granulocytopenia and familial predisposition may play a part in this hypersensitivity. The author cites reports from the literature which corroborate this suggestion.

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*Epiphysiolysis of Head of Femur and Its Treatment. N. A. Nicolaysen.—p. 733.

Epiphysiolysis of Head of Femur and Its Treatment.—Nicolaysen reports nine cases of epiphysiolysis of the head of the femur treated by closed reduction and immobilization in plaster of paris in the Whitman position and nine treated by more conservative methods. He followed up all but one of these from one and a half to nine years. The end results were judged (1) from the subjective point of view, (2) clinically on the basis of shortening, muscular atrophy and motility according to the Ferguson and Howorth index and (3) anatomically from roentgenograms. In thirteen cases (more than 70 per cent) the results were good to excellent, in three good, and in two fair. The results of closed reduction were in every respect superior to those of conservative methods.

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Hygiea

Experiences as Volunteer Civil Surgeon in Finland. J. Olow.—p. 833.
*Sternal Puncture and Its Practical and Theoretical Significance. N. G. Nordenson.—p. 834.

Sternal Puncture and Its Significance.—Nordenson states that from the diagnostic point of view bone marrow puncture has relative limitations. In vague anemias with sufficiently low red blood corpuscle values the diagnosis can be made by sternal puncture. Hyperplastic but normally normoblastic erythropoiesis usually occurs in pernicious anemia in remission, in essential hypochromatic anemia, in hemolytic jaundice and in "erythroblastosis" in children. Hyperplastic erythropoiesis also appears in anemia due to hemorrhage, toxic anemia and anemia due to digestive disorders. Strongly degenerative myelopoiesis is pathognomonic for pernicious anemia and diagnosis can be made even if promegaloblasts and megaloblasts are few. In leukopenic myeloses and leukopenic lymphadenoses with vague peripheral blood picture the sternal punctate is typical and diagnosis is possible at an early stage. Lymphatic metaplasia of the bone marrow is pathognomonic for lymphadenosis. Sternal puncture is of great value in the differential diagnosis between lymphatic leukemia and infectious mononucleosis. In mononucleosis lymphatic bone marrow is absent and the bone marrow picture is largely normal. A hyperplastic megakaryocyte system often occurs in genuine polyglobulism and eventually in essential thrombocytopenia. The diagnosis of reticular and monocytic leukemia can be made during life by sternal puncture. In these diseases the bone marrow reticulum is strongly hyperplastic. In myeloma the bone marrow pictures show hyperplasia of the plasma cell types of the reticular cells. In vague febrile diseases which cause cachexia, sternal puncture is indicated. The diagnosis of Gaucher's disease can be made directly on the finding of typical Gaucher cells. The occurrence of cancer metastases is as a rule a surprise. Demonstration of protozoa and bacteria is of less interest. The effect of roentgen treatment can be seen in the bone marrow and the effect of extirpation of the spleen in hemolytic jaundice can be studied. Study of the origin of the blood cells by sternal puncture is superior to the pathologic-anatomic method. The reticular cell of the bone marrow is the mother cell of all cells. The "blast" cells are merely transition forms. The first marrow cells in the fetus consist of the primitive lymphoid reticular cells. In normal marrow this primitive cell functions as the mother cell of erythrocytes and plasma cells. In myelopoiesis the myeloblast functions as the mother cell, but in normal bone marrow certain transition forms from reticular cells to myeloblasts are absent. These forms are, however, seen in pathologic myelopoiesis, especially in myeloblast leukemia. The preliminary stages of thrombocytes and megakaryocytes are formed from the myeloblasts. In lymphatic metaplasia of the bone marrow direct transition forms from reticular cells to immature lymphocytes are seen, particularly in acute lymphoid leukemias. The origin of the monocytes continues uncertain but they apparently develop via the monoblasts from the reticular cells.